Marine Review

The National Publication Covering the Business of Transportation by Water

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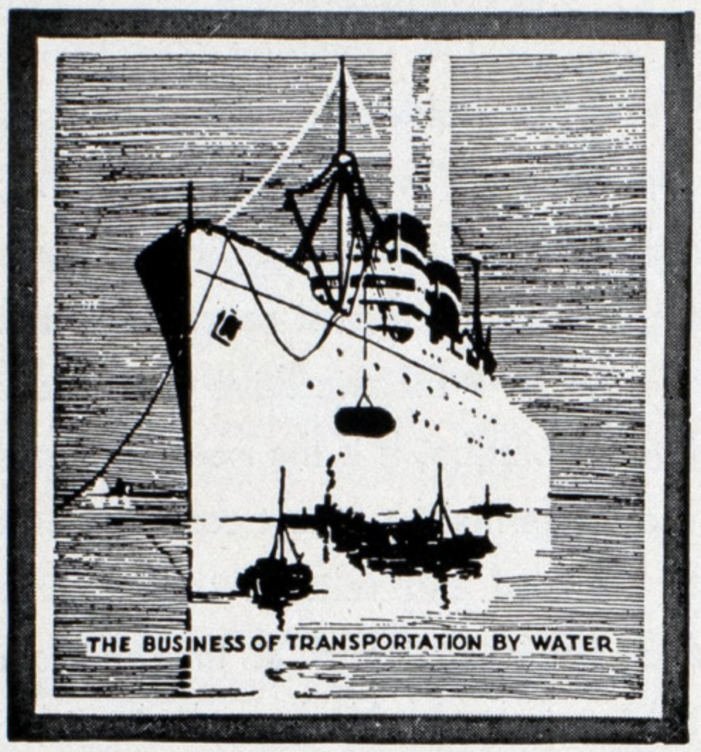

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« EDITORIAL »

Reorganization Consolidates Marine Activities

ON Dec. 9, President Hoover sent a message to congress covering his recommendations for the reorganization of the executive departments of government. By act of congress, June 30, 1932, the President was authorized to carry out a reorganization of government administrative functions by issuing the necessary executive orders and providing that such executive orders be transmitted to congress while in session. Also that these orders shall not become effective until the expiration of 60 calendar days, unless congress shall in the meantime approve them.

It was under this authority that the President on Dec. 9 issued executive orders affecting a total of 58 executive agencies and parts of agencies. One of the effects, the President stated in his message, is to reduce by about 15 the number of independent agencies and commissions.

The law definitely limited executive action, so that no statutory functions could be abolished. In view of this, the President points out, it is necessary to retain many commissions, but that under the orders issued their administrative functions are placed under various departments, the commissions retaining their advisory functions only. It is well to bear this in mind because it has been incorrectly stated that the shipping board by executive order now comes under the department of commerce. This is not so. There is no authority in the congressional enabling act to do so.

Possible Effect on Merchant Marine

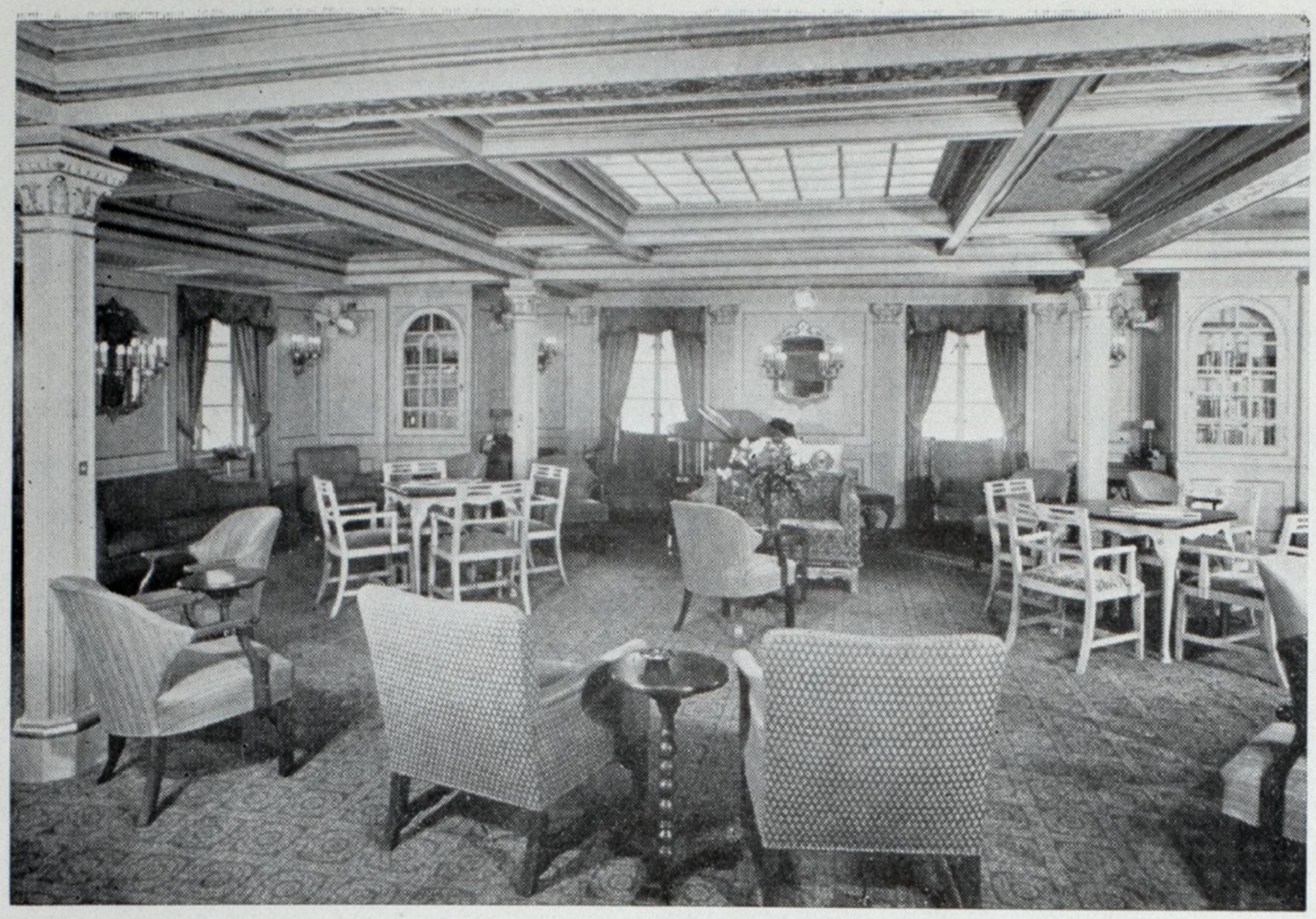
Let us consider the effect of the executive orders issued as far as the merchant marine is concerned. A merchant marine division in the department of commerce, to be headed by an assistant secretary of commerce for merchant marine, has been established. To this division have been transferred the following:

1. Coast and geodetic survey.
2. Hydrographic office of the navy, to the coast and geodetic survey.
3. Survey of Northern and Northwestern lakes, to the coast and geodetic survey.
4. Bureau of navigation and steamboat inspection.
5. Supervisor of New York harbor to the bureau of navigation and steamboat inspection.
6. Naval observatory, with certain exceptions, to the department of commerce.
7. The United States Shipping Board Merchant Fleet Corp. to the department of commerce.
8. Inland Waterways Corp. to the department of commerce.
9. Bureau of lighthouses.

This re-arrangement and consolidation of functions bearing upon the merchant marine, if finally allowed to take place, will undoubtedly materially strengthen the position of the merchant marine in its relation to activities of the government. It will bring under one directing head, the assistant secretary of commerce for merchant marine, all of the administrative functions to the end that they may be intelligently and energetically managed in the best interests of the merchant marine and the country at large.

Shipping Board Continues Independent

It is important in this connection to bear in mind that this does not in any way affect or limit the true function of the shipping board as an independent regulatory and advisory body which under mandate of congress is invested with the responsibility of encouraging, by every means within its power, the upbuilding of an adequate and efficient merchant marine. It will be recalled that the shipping board has been re-organized and now consists of three members including its chairman. We believe that the shipping board should, in all circumstances, be continued as an independent body directly responsible only to the President and the congress. The executive orders issued by the President do not in any way, could not legally, affect this status. We believe that the duties of the Merchant Fleet Corp. can well be and should be placed, as the President by executive order, has caused them to be, under an assistant secretary for merchant marine in the department of commerce.



Lounge S. S. Colombia

IMPROVEMENT in social and trade relations between countries dependent on sea communications is greatly facilitated by a regular, speedy and efficient transportation service. In the building of two carefully planned, specifically suited, modern ships for the New York, West Indies and South American route, the Colombian Steamship Co. will attract increased passenger and cargo patronage.

S. S. COLOMBIA

For West Indies and South American Service

EVERY new ship coming out of American shipyards for overseas service brings nearer the realization of the objective of the merchant marine act of 1928 that a fair proportion of our own exports and imports should be carried in our own ships. If this program is carried on, as every thinking real American feels that it should be, our flag will again take its proper place with those of other nations in all the ports of consequence in the world. The S. S. COLOMBIA and the S. S. HAITI are among the latest to be added to our steadily growing merchant fleet. They can be truly said to be luxurious ships, far surpassing any other ship previously used in the same service, and they will be effective representatives of the United States in bringing about closer social and trade relations with the West Indies and South America.

Principal characteristics of these vessels are for convenience listed in the accompanying table. The COLOMBIA sailed from New York on her maiden voyage Nov. 24, and as this is written, the HAITI was scheduled to sail from the same port on Dec. 22. The service of these ships, for passengers and freight, is between New York and the Republic of Colombia, South America. Stops are made at Port au Prince, Haiti; Kingston, Jamaica; Puerto Colombia; Cartagena, Colombia; Cristobal, Panama Canal Zone; and Colon, Republic of Panama.

Experience in the trade is a most important factor in the planning of suitable vessels for any particular service. Certain specific requirements for these new vessels were laid down, by two men of long experience in the Colombian trade, H. H. Raymond, president of the Colombian Steamship Co., also chairman of the board of the Atlantic, Gulf & West Indies Steamship lines, and C. H. C. Pearsall, vice president and general manager of the Colombian Steamship Co. Theodore E. Ferris, New York naval architect and marine engineer, was commissioned to design the vessels to meet these specific requirements.

Special Care in Planning

As a result of this care in planning, these vessels have an individual character and a number of distinctive features as combination passenger and freight carriers especially fitting them for this trade and giving them an economy of operation to meet competition with any vessel that may be placed in this service.

In traveling on these ships, passengers visit interesting cities under five different national flags. The route is through the Crooked island passage in the West Indies and hard by the historic island of San Salvador where Columbus first set foot in the new world. In taste and comfort of the public passenger spaces and in the convenience of passenger staterooms the new vessels compare favorably with any of their size afloat. They also incorporate the very best in modern American marine engineering and naval architecture. Not only in planning but in the building did they receive the benefit of long experience, being built by the Newport News Shipbuilding & Dry Dock Co. They were constructed under the supervision, as well as to the designs, of Mr. Ferris.

Full advantage was taken of the results from the investigations made in connection with the design of the proposed American superliner particularly with respect to recent developments in hull form for least resistance and maximum seaworthy properties and in materials for both hull construction and fittings. The interior decorations were planned by Philip Kiesecker, New York.

Ample Steaming Radius

A round trip, from New York on the route these ships cover can be made without taking on additional fuel. A round trip at normal speed could also be made transatlantic with fuel oil to spare. To determine the best hull forms model experiments were conducted at the experimental model basin at the navy yard in Washington. Features of the under body include a bulbous bow, special streamlined stern, and streamlined rudder.

Data for this article supplied by the Newport News Shipbuilding & Dry Dock Co. and H. M. Wick of Theodore E. Ferris' staff.

The new vessels fully comply with the American bureau of shipping rules to its highest class and also fully comply with all of the requirements and recommendations of the international conference of safety of life at sea, although these requirements have not yet been made mandatory by legislative action on the part of the United States. Over and above these requirements, additional and higher watertight bulkheads have been fitted in accordance with the recommendations of the construction loan committee of the shipping board, and the navy department, in order to make these vessels complete two compartment ships.

Two Compartment Ships

Just what the latter means in the case of an accident is interesting. For instance, if the side or bottom of the ship were damaged to such an extent as to cross a main watertight bulkhead, so that the two largest compartments were completely flooded, calculations indicate that the ship would not sink. That is, should two such enormous spaces as the boiler room and engine room, or the great middle hold and the large hold space just forward of that, be flooded at the same time, the ship would still float. These ships, therefore, more than meet recent ideas on safety.

Full requirements of the United States steamboat inspection service for lifesaving and for fire protection, prevention and fire fighting arrangements, have, of course, been met in every detail, as have all of the rules of the United States public health service. All of the drinking water tanks are thoroughly sterilized and the ships are rat-proofed throughout, with all the galley and pantry spaces enclosed with steel or steel mesh bulkheads so that rats cannot get through. Everything in the galleys, pantry and storeroom spaces is made of metal or covered with metal.

On Nov. 10, 1932, the COLOMBIA was given a builder's sea trial off the Virginia capes, during which speed and economy runs were made between Chesapeake and Winter Quarter light vessels, a distance of 67.5 nautical miles. One run was made in each direction at an average speed slightly under 18½ knots with the propelling machinery developing about 8275 shaft horsepower at 110.6 revolutions per minute, of the propeller. The fuel consumption for all purposes was well under the guaranteed figure of .75 pound per shaft horsepower per hour, with fuel oil at 18,500 B.t.u. per pound.

Propulsion is by single screw and the machinery consists of one set of Newport News impulse type turbines comprising one high pressure, one intermediate pressure and one low pressure turbine in series, each driving a separate pinion meshed to a single reduction gear secured to the propeller shaft. Astern elements of impulse type in series are incorporated in the exhaust end of the intermediate and low pressure turbines. The machinery is rated at 6500 shaft horsepower at 105 revolutions per minute, but is capable of maintaining 7500 shaft horsepower at 109 revolutions per minute continuously. Cross connecting pipes and steam and exhaust pipes are so arranged that in an emergency any one turbine if disabled can be disconnected and bypassed, leaving two turbines for ahead running and at least one turbine for astern. The reduction gearing, as well as the propulsion turbines, were designed and built by the shipbuilder.

The three pinions of the single reduction gear are arranged in the upper half of the gear case to give ample room for the underslung condenser. The main gear wheel is about 140 inches in diameter. The quietness with which the gears operated on trial is due to the accuracy of the gear cutting and the extreme care during erection to obtain perfect alignment. All turbine rotors were carefully balanced in the builder's dynamic balancing machine and given a shop spinning test under steam, at 25 per cent above their designed speed, in their own casings, before installation in the ship.

Four Watertube Boilers

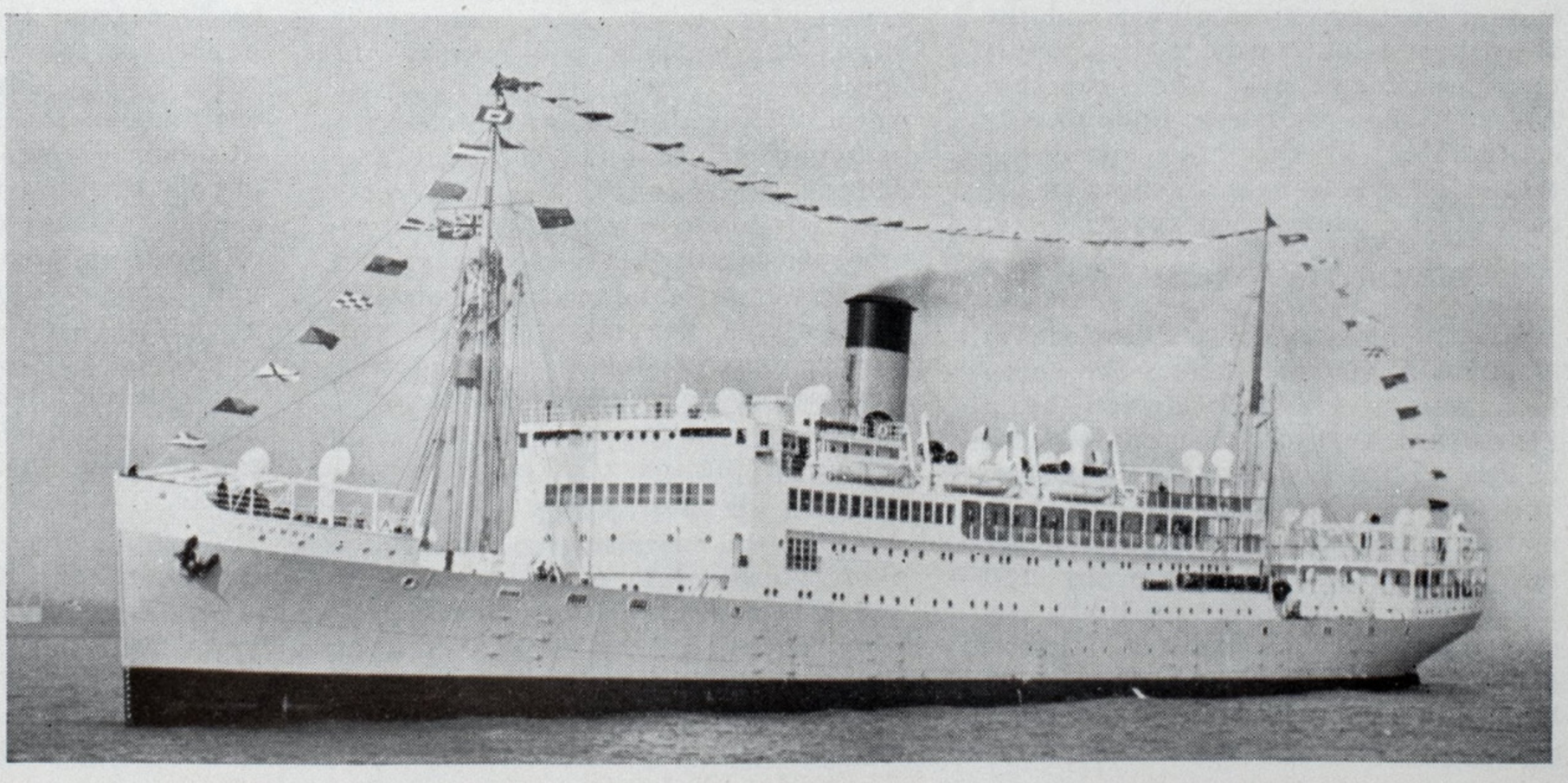
Steam is supplied by four Babcock & Wilcox marine type watertube boilers with inter-deck superheater. The working steam pressure is 400 pounds per square inch, and the total steam temperature is 678 degrees Fahr., and 230 degrees superheat. The total evaporating surface in the four boilers is about 17,780 square feet, and the total superheating surface is about 2060 square feet. At normal power only three boilers are necessary. Todd oil burners and Diamond soot blowers are fitted. Desuperheating coils are fitted in the boiler drums for supplying saturated steam to the reciprocating pumps. Combustion air is supplied by two motor driven B. F. Sturtevant Co. forced draft blowers.

The main condenser has a cooling

Principal Characteristics

S. S. Colombia, S. S. Haiti

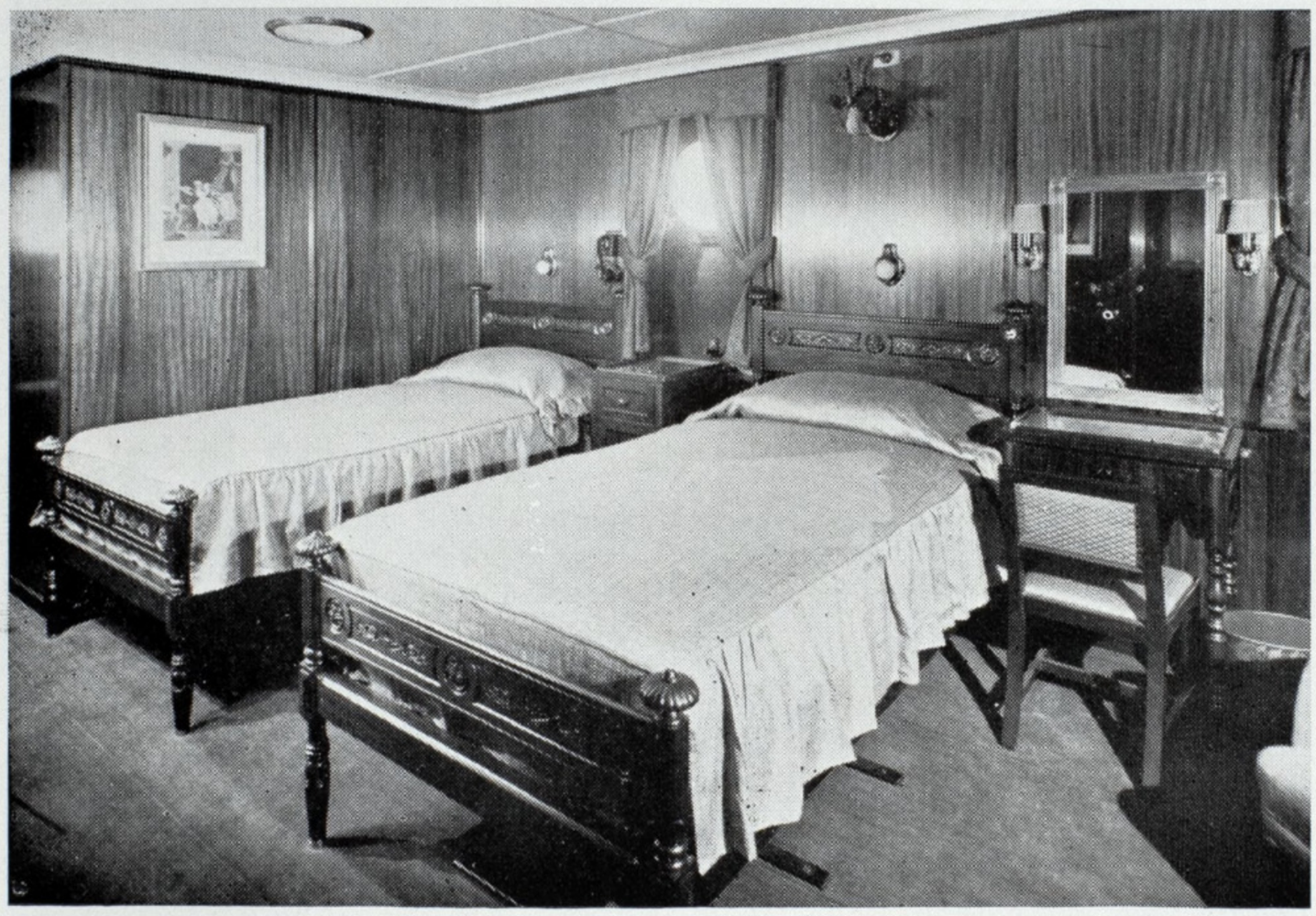
Builder	Newport News S. B. & D. D. Co.
Owner	Colombian Steamship Co.
Naval Architect	Theodore E. Ferris
Launched, Colombia, Aug. 6,'32; Hati, Sept.	17,'32
Sailed, Colombia, Nov. 24,'32; Haiti Dec.	22,'32
Length overall, feet, inches	404 5
Length between pp., feet, inches	385 0
Beam molded, feet, inches	57 6
Depth molded to upper deck, ft., in.	31 5
Draft, loaded feet, inches	23 6
Displacement, tons	9490
Gross tonnage	5236
Net tonnage	3042
Propelling machinery, single screw, turbine reduction gears, normal shaft horsepower	7500
Speed normal, knots	16
Maximum speed on trial, knots	18¾
Refrigerated cargo space, cubic feet	58,500
Mechanically ventilated cargo space c.f.	67,500
General cargo space, cubic feet	87,000
Total cargo capacity, cubic feet	213,000
Fuel oil capacity, gallons	320,000
Fresh water capacity, gallons	173,000
Passenger accommodations for	158
First class	134
Tourist class	24
Crew, total	95



S. S. Colombia, Single screw turbine geared passenger and freight liner built by the Newport News Shipbuilding & Dry Dock Co. for the Colombian Steamship Co. — Sailed on maiden voyage from New York Nov. 24, 1932

surface of 7500 square feet, and the circulating pump has a capacity of 11,000 gallons. Both condenser and pump were designed and built by the Newport News Shipbuilding & Dry Dock Co. The air injecting apparatus was supplied by the C. H. Wheeler Co., who also collaborated with the shipbuilder in the condenser tube sheet layout. Performance of the vacuum equipment on the trials was especially satisfactory. A 29-inch vacuum was maintained throughout the full power run with a condensate depression of less than a degree and a terminal difference of about 5 degrees.

Every effort was made to obtain the highest possible propulsive efficiency, not only in the design of the propeller itself, but also in the design of the hull structure aft. The propeller is of solid manganese bronze, 17 feet 8 inches in diameter and 17 feet 6 inches in pitch, and it has four blades of airfoil section. Rudder and rudder post are streamlined and the stern post is cut away to give ample clearness forward of the propeller. All of these features undoubtedly contributed to the high speed obtained on trial—over 2 knots in excess of the guaranteed speed.



S. S. Colombia—Bedroom of one of the deluxe suites on bridge deck

Electric Drive Auxiliaries

All the propulsion auxiliaries are electrically driven except the main feed pump, which is driven by a Sturtevant turbine. A complete list of the pumps installed, their service and size, are given as follows: one main circulating, 11,000 gallons per minute, centrifugal, driven by 110 horsepower motor; one auxiliary circulating, 1800 gallons per minute, centrifugal, 50 horsepower motor; two main condensate, 150 gallons per minute, centrifugal, 10 horsepower motor; one auxiliary condensate, 25 gallons per minute, centrifugal, 3 horsepower motor; two main feed 200 gallons per minute, centrifugal, steam turbine; one auxiliary feed, vertical simplex, 11 x 7 x 24 inches, steam; two lubricating oil, 325 gallons per minute, rotary, 15 horsepower motor; one fuel oil service, 20 gallons per minute, screw, 10 horsepower motor; one fuel oil service, vertical simplex, 6½ x 4 x 12 inches, steam; one fuel oil transfer, vertical duplex, 9 x 6 x 10 inches, steam; one ballast, vertical duplex, 10 x 12 x 12 inches, steam; one fire and bilge, vertical duplex, 12 x 8½ x 12 inches, steam; one sanitary and fire, centrifugal, 400 gallons per minute, 40 horsepower motor; one fire and general service, vertical duplex, 14 x 11 x 12 inches, steam; one evaporator feed, vertical duplex, 5¼ x 5½ x 5 inches, steam; all of the following are centrifugal pumps and are motor driven, their service, size and motor horsepower are: one emergency bilge, 425 gallons per minute, 11 horsepower; two culinary fresh water, 75 gallons per minute, 5 horsepower; one hot fresh water, 60 gallons per minute, 3 horsepower; one scuttlebutt circulating, 10 gallons per minute, 2 horsepower; two refrigerating condenser circulating, 450 gallons per minute, 12 horsepower; one refrigerating condenser circulating, 25 gallons per minute, 1 horsepower; three refrigerating brine circulating, 225 gallons per minute, 7½ horsepower.

All of the centrifugal pumps listed above, excepting main circulating, and all of the reciprocating pumps were supplied by the Worthington Pump & Machinery Corp.

There are three complete steel decks in the hull and three decks in the superstructure. Houses in the superstructure are of steel except the small deck entrance house aft. This serves as an additional protection against the possibility of fire. As a further prevention against such a disaster, the spaces above the ceilings of passenger staterooms are divided off into sections and are separated from public spaces by means of asbestos sheathing.

Accommodations are provided for 134 first class passengers, 24 tourist passengers, and a crew of 95. The principal entrance for first class passengers is on the bridge deck, at the after end of the superstructure. For entrance from the New York piers, a hinged platform is provided at each after corner of the superstructure, to receive the gangway from the pier. For West Indian and South American service, there is an adjustable step accommodation ladder on each side, and for some of the low deck piers, a rather unique arrangement of sloping ramp attached to the lower platform of the accommodation ladder and provided with castors at outer end for rolling around in any direction on the pier to suit the movement of the ship.

Decoration of Lounge

On entering the vessel, there is first a spacious deck veranda from which leads a wide passage into the after social hall. From this space the wide stairway leads down to the purser's office and up to the smoking room. Passageways lead forward to passengers staterooms and to the forward stair hall where there is a wide stairway from the main dining room below to the main lounge and music room above. These passageways, lobbies and stair halls are finished in hardwood paneling decorated in modern Spanish design. Looking down the stairway from the main entrance hall, a mural painting on the stair landing gives the effect of a marine scene viewed from a window balcony.

The lounge and music room reached from the forward stair hall is perhaps the most important public space on the ship. The lobby at the entrance to the lounge is in modern Spanish design with hardwood panels of light-tone similar to the other passageways and lobbies. Mirrors enhance the size of this lobby. A suggestion of the tropics is given by boxes of Spanish tile, supported on half-polished steel stands, for holding plants. Some of these boxes were made from old tile obtained from the walls of a Spanish castle.

Opening into the lobby by wide double folding doors of Spanish design, the lounge is formal in treatment and also serves as a music room and for writing. The bulkheads are painted a soft blue-gray with moldings of antique gold. The ceil-

ing is in a light-tone of "cafe au lait" with subdued Spanish decorations, having very little color. The heavier moldings are done in gold. On the principal panels in the room are old Spanish mirrors with candelabra arms on either side. Full length curtains are of silk damask in old rose with figured gold borders, and heavy gold and rose fringe. The tone of the furniture fabrics are old blue, gold and rose, with a two-toned carpet to harmonize.

Adjacent to the lounge is the enclosed promenade, the glass sides of which are so low that reclining in the steamer chair, a clear view of the sea is possible. Aft of the closed promenade is the open promenade which, with the enclosed portion, gives a continuous promenade all around this deck, the total length being a little over 12½ laps to the mile.

The smoking room is reached from the after stair hall. An interesting feature is an illustrated map framed under glass on the port side of the stair hall just forward of the smoking room. This map indicates in a pictorial manner the complete route of the vessel, and is accurate from a technical standpoint. The actual course of the vessel from New York to various ports of call and return, is marked by means of a tiny copper wire which holds at any point a tiny aluminum reproduction of the vessel. This unique map, the only one of its kind in the world, was made by Fenno F. Heath of Newport News, Va.

Smoking Room in Hardwood

Finished in hardwood of brown tones, wire brushed and antiqued, with incased beams of hardwood, decorated in color, the smoking room is particularly attractive. An octagonal skylight, lighted from above, gives the effect of sunlight. The furniture is covered in rich Spanish fabrics. The wide double-folding doors, giving access to the stair lobby, are carved in Spanish motifs with arches and spindles covering the upper glass spaces. The stair lobby is practically a part of the smoking room, adding spaciousness to the whole. The floor covering of the smoking room is duplicated in the stair lobby and the stairway to the boat deck. Rubber tile of senna green and dark gray simulates the ceramic tile in colorful Spanish design. A feature of the smoking room is a complete bar equipped with a large electric ice box of General Electric make and a unique beer on draught plant.

The veranda on the bridge deck, while the ship is at sea, is transformed into the swimming pool space. The wood decking in the center of the space, flush with and similar to the remainder of the deck, is arranged for quick removal giving access to the swimming pool. For all practical purposes, it is an outside pool since the entire after end of the veranda is open. At the same time, it is somewhat protected from the weather in case of rain. In addition to the open part on the veranda deck, the passenger has the complete freedom of the boat deck level just above for dancing and games. Music is provided through a radio loud speaker. The pool is provided with special lighting so that it may be used at night.

From a decorative and artistic standpoint, the main dining saloon is perhaps the most attractive space on board. The entrance lobby is of modern Spanish architectural design. The arched entrance door to the dining room is fitted with double swing doors with carved arches and spindles over the upper glass spaces. These doors are closed only when the dining room air conditioning system is in operation under extremely hot conditions. Normal ventilation is provided by means of a mechanical exhaust ventilation system concealed in the central dome. On three sides the dining room is fitted with large air ports, those on two sides being fitted with patented folding stainless steel windscoops, catching every breath of air that its stirring. If there should be no breath of air, the passengers will still find the dining room entirely comfortable as a mechanical air conditioning and cooling system provides pure, clean fresh air of exactly the right temperature and humidity.

Bulkheads of the dining room are of brown mahogany with antique gold ornaments. The ceiling is painted and frescoed with Spanish motifs. A large skylight surmounts the center of the room. The sides of the skylight dome are covered with beautifully executed mural paintings historically reminiscent of Colombia in the days when it was first settled. The murals are the work of Thomas C. Skinner.

Galleys and pantries are located on the port side of the ship, aft of the dining room, entered through a screened arched doorway symmetrical with the passenger entrance on the starboard side. Electric ranges, electric refrigerators and every electrically operated device for the highest class of culinary service are installed. Stainless steel is used for utensils and dresser tops.

S. S. Colombia —Main dining saloon. Kept cool and comfortable in the hottest weather by mechanical air conditioning providing clean air of exactly the right temperature and humidity. This room is paneled in brown mahogany with antique gold decorations. The ceiling is painted and decorated with Spanish designs

DeLuxe Suites and Staterooms

Deluxe suites are located forward and aft on the bridge deck. Those forward consist of four sets of twin bedrooms with private baths, two on each side of the vessel, and have between them on each side a parlor veranda which opens into and can be used exclusively with either suite, if desired. The twin bed staterooms with shower baths, adjacent to the suites, also open into them and can be made a part of the suites if desired. The deluxe suites have a communicating passage on each side entirely separate from the main forward passenger passage of the vessel.

The deluxe suites are finished in different hardwoods with narrow trim of contrasting color. The woods for the forward suites are African mahogany and Oriental walnut. Fur-

niture is of walnut and is especially designed and has Spanish polychrome on the carving. The fabrics and hangings are in rose, turquoise blue and gray gold. Colored engravings and mirrors in gold frames enhance the richness of hardwood bulkheads. The lighting is ample, yet restful. Silk shades are used for lights over dressing tables or chiffoniers. Other lighting fixtures are perforated, etched, crystal glass in gold frames giving indirect light of sparkle without glare. Passageways and lobbies are similarly lighted in principle.

The parlor verandas are attractively and comfortably furnished with teak table and serving table, wicker chairs and chaise lounge. The walls are tinted and ornamentally stenciled. Lighting is by means of wrought iron Spanish lanterns. This space is opened to the sea by heavy bronze casements with large plate glass panes. These windows were supplied by Kearfott Engineering Co. Inc. They open from side to side of the veranda and from deck to deck. Protection of the opening is provided by a polished brass rail with teak cap rail. On the after end of the bridge deck are four similar suites except that they have no private veranda. The woods used in the panels here are framire and American walnut.

Regular first class staterooms have wide comfortable twin beds, with bureau dresser between them, double wardrobes, lavatory with hot and cold water with toilet cabinet over it. All of the special rooms have shower bath space attached with lavatory fitted in this space.

All staterooms have mechanical ventilation on the thermo tank system with punkah louvres, and electric fans as well. Every passenger stateroom is an outside room, even including the tourist staterooms. Practically all first class rooms have two air ports with a folding stainless steel windscoop in one of them. The ports are the shipbuilder's latest type hinging down, and are designed so that they may be partially open even in fairly bad weather and still prevent entrance of rain or spray. Staterooms on the promenade deck have metal frame mechanical operated windows.

Attractive Tourist Accommodations

Tourist accommodations include lounge and smoking room on the poop deck. These accommodations are unusually attractive throughout. The staterooms are fitted with double metal berths of square tubing in mahogany color and have a lavatory with hot and cold running water. Tourist promenade deck is continuous and of about 33 laps to the mile. An ample tourist game deck space is provided on top of the poop deckhouse. The dining room is located on the upper deck and is neatly and attractively arranged.

For first class passengers, an outdoor dancing and game deck is provided on the boat deck level. This deck may be completely covered by an awning, and also on special occasions may be lighted by means of special fixtures producing a moonlight effect, or by festoons of colored lights. At the rails surrounding this deck are comfortable seats of teak. Music is provided by the ship's orchestra or by the radio broadcasting system, outlets for which are also provided in all the public spaces.

While the passenger accommodations and passenger trade on these vessels is an important feature, the vessels are especially well suited for carrying cargo. There are six major cargo spaces, the capacities of which are given in the table on page (9). Cargo spaces Nos. 3 and 4 are served through cargo ports, the others are served through overall hatches. Hatches to Nos. 1 and 6 are 18 x 14 feet; to No. 2, 24 feet 9 inches x 18 feet; and to No. 5, 25 x 18 feet. The foremast is located between hatches to Nos. 1 and 2, on the mainmast between hatches to Nos. 5 and 6.

Four 5-ton booms are fitted on each mast and one 25-ton boom is fitted on the foremast. There is a 'tween deck hatch crane in each of the Nos. 3 and 4 cargo spaces, each crane being served by a single drum, double reduction, electric winch. There are four winches at each mast, the two winches on the after side of the foremast being double drum winches for serving the 25-ton boom.

Electric Drive Winches

All other winches are single drum, double reduction, electric motor drive, capable of a 4000-pound lift at 174 feet per minute. One of the drums of the double drum winches has the same capacity for service with the 5-ton booms and a clutch is provided which throws this drum out of gear and a heavy lift, triple reduction drum into gear. The heavy lift drum is able to hoist 25 tons on a nine part fall at a speed of about 9 feet per minute. All of the winches were designed and built by the builder of the vessel. The motors are all of 25 horsepower. The winches are of rugged construction and did not exceed the motor rating on any of the above performances.

The steering gear is of the electric hydraulic tiller type, supplied by the American Engineering Co. It has two cylinders with a double plunger located athwartship, operating the tiller through a sliding block. This arrangement efficiently utilizes the limited space for the steering gear. The hydraulic pumps are motor driven and in duplicate. In case of complete breakdown of the steering gear, the vertical shafts, driving the capstans on the poop deck are provided with drums for use with emergency tiller and relieving tackle. The motors for the capstans are located in the steering gear room and deliver power to the capstans for a pull of 11,000 pounds.

In the place of capstans forward, the anchor windlass is provided with two high speed warping heads capable of asserting a pull of 11,000 pounds. The windlass is electric driven and is of spur gear type with two wildcats, capable of handling the two bower anchors simultaneously in 30 fathoms of water. Windlass and capstans were also supplied by the American Engineering Co.

Refrigerating machinery consists of two independent Carrier-Brunswick ammonia plants, one for air-cooled cargo space on the main and lower 'tween decks, of No. 2 and No. 5 holds, and for conditioning the air for the main dining room, the other plant being for the ship's storeroom.

Cargo Refrigerating Plant

In the main cargo refrigerating plant, there are three complete units, each unit comprising a compressor, condenser, brine cooler and brine circulating pumps. There are two brine return tanks and all units are inter-connected to permit maximum flexibility of operation. Two different brine temperatures may be carried at the same time to meet the needs of different kinds of cargo. This may be done with practically any combination of compressors and brine coolers. The three motor driven compressors are each of 16 tons standard rating of the American Society of Refrigerating Engineers. The motor driven brine of circulating pumps each have a capacity of 225 gallons per minute. The two condenser circulating pumps are each rated at 450 gallons per minute.

Cargo holds are cooled by the indirect method and two fans in each hold circulate the air over a series of brine coils and distribute the chilled air throughout each hold by means of carefully arranged ducts and louvres. The refrigerated cargo space totals about 7000 cubic feet inside the insulation and including ducts and coil room. The plant is designed to maintain temperatures of from 35 to 53 degrees Fahr. A complete system of banana carrying bins has been provided.

For ship's stores, there is an entirely independent refrigerating system consisting of a single motor driven ammonia compressor, two condensers and one circulating pump. Cooling is by direct expansion. There are nine boxes totaling about 3000 cubic feet of space. In addition to the usual scuttlebutt with its circulating pump for the ship's drinking water supply, there is also an ice making set.

The system for air conditioning

(*Continued on Page* 38)

Optimism and Confidence Returns

As Shipping Slowly Forges Ahead

By R. Stanley Dollar*

THAT confidence and optimism have returned, not only to shipowners but to all other business and trade activities, is the big factor to be considered in the United States today. Out of the depths of depression the mid-year brought a shadowy, almost imperceptible change for the better. Then from all sides seemed to come the glad opinion, "things are getting better." This rose to a cry which swept from Atlantic to Pacific. Confidence and optimism took command, until today the United States is going ahead with a firm, steady stride which eventually will lead to the goal of "good times."

In my opinion this trend toward betterment is not temporary nor is it a mere spurt in business which will dwindle after a certain period. Each day brings new lines of commercial activity, pointing to the return of normal times. Re-employment is on the way and that is of major importance. We never will be back to true prosperity until our unemployed once more are busy. Every effort is being made by employers to bring about this happy condition.

That prosperity is immediate, or as so often described as being 'just around the corner" is over-optimistic. But, with the confidence which has been reborn in our people by this trend toward good times I feel there can be no failure in the battle of business against the economic depression.

That shipping is looking better and better is an opinion I have reiterated frequently in the past few months. Volume is increasing gradually and I believe will continue to pick up steadily. Shipowners and operators can afford to take cheer in the trend of the last few months. It is a certainty that we could not have reached a much lower level than observed some six months back. This country's history is that we never stay on one level long; we move either up or down. We had about reached our limit of descent, so upward was our natural course. The minute a revival is noted in any form of business, the transportation industry feels the effect almost immediately. Thus shipping and other forms of transportation are good to watch as a weathervane.

There can be no question but that sentiment among the shipping fraternity in this country is much better. However, shipping men are not unmindful of the fact that there is still much surplus tonnage in the transatlantic trades, with new Italian lines, the English and French liners and other ships planning to go into commission soon.

The volume of merchant shipbuilding throughout the world for the first time in 50 years has fallen below the 1,000,000 ton mark, as was recently revealed by Lloyds Register of Shipping. Decreases were reported in the quarter between June and September

R. Stanley Dollar

by all nations except Japan, which showed a slight increase. In the case of the United States this comparatively slight decrease may be described to completion of vessels in our government's ambitious merchant shipbuilding program, which was made possible under the provisions of the Jones-White act.

Notable in the 1932 list of completed ships which were built under the beneficient scope of this act, an aid which did more for American shipbuilding than anything in the history of the industry, appear the United States lines MANHATTAN, the largest ship ever built in our country; the MONTEREY of the Matson line, with its LURLINE rapidly reaching readiness; the Grace line's SANTA ROSA, with three sister ships crowding close behind her, and the CHIRIQUI, ANTIGUA, VERAGUA and QUIRIGUA of the United Fruit Co.

That the volume of shipbuilding has fallen to a low not recorded in 50 years may be explained in part by the fact that ships planned before the slump of three years ago have reached completion. In the hitherto depressed state of the world no new ships were contemplated and building naturally was slowed down. It is to be hoped that the trend toward good times will rehabilitate commerce to such an extent that continued shipbuilding at the former rate will be demanded.

When the turn for the better came around the middle of last year, shipping seemed to feel its effect almost immediately. Several big spurts in the eastbound intercoastal trade (North Pacific to North Atlantic) and also to the United Kingdom were noted, but as is usual with such sensational advances they soon declined. However by now there has been a good pick-up in many routes, notably the Oriental, Hawaiian, Australian and westbound intercoastal, all showing steady gains which are holding. Every service in which the Dollar line is engaged has shown slight accumulative gains in tonnage since last summer. Of our country's volume of laid-up tonnage, a bit of it has gone back into service since summer and more may be expected monthly.

Despite previously disturbed conditions it is noticeable that conference control has been restored to a great extent after a moderate breakdown in 1931. In many cases rates have been raised, but of course not to the levels prior to the dissolution of the conferences. However, bulk freights have been and still are moving at very unattractive rates.

Conservative management and cheaper operation are two lessons which came out of the difficult period of the depression. Coupled with the upturn which is now seemingly assured these two elements will be invaluable aids in bringing back shipping to the position it once held.

Closer co-operation of shipowners of all nations, in trade routes all over the world, is absolutely essential in order to hasten the return of prosperity to shipping. With this accomplished, equitable rates could be established and maintained, thus placing shipping on a firm basis.

In conclusion, I believe that the present rate of gain shown in American shipping is indicative of a material upward trend in business of the world, for the improvement in this industry in one country cannot fail to react favorably everywhere.

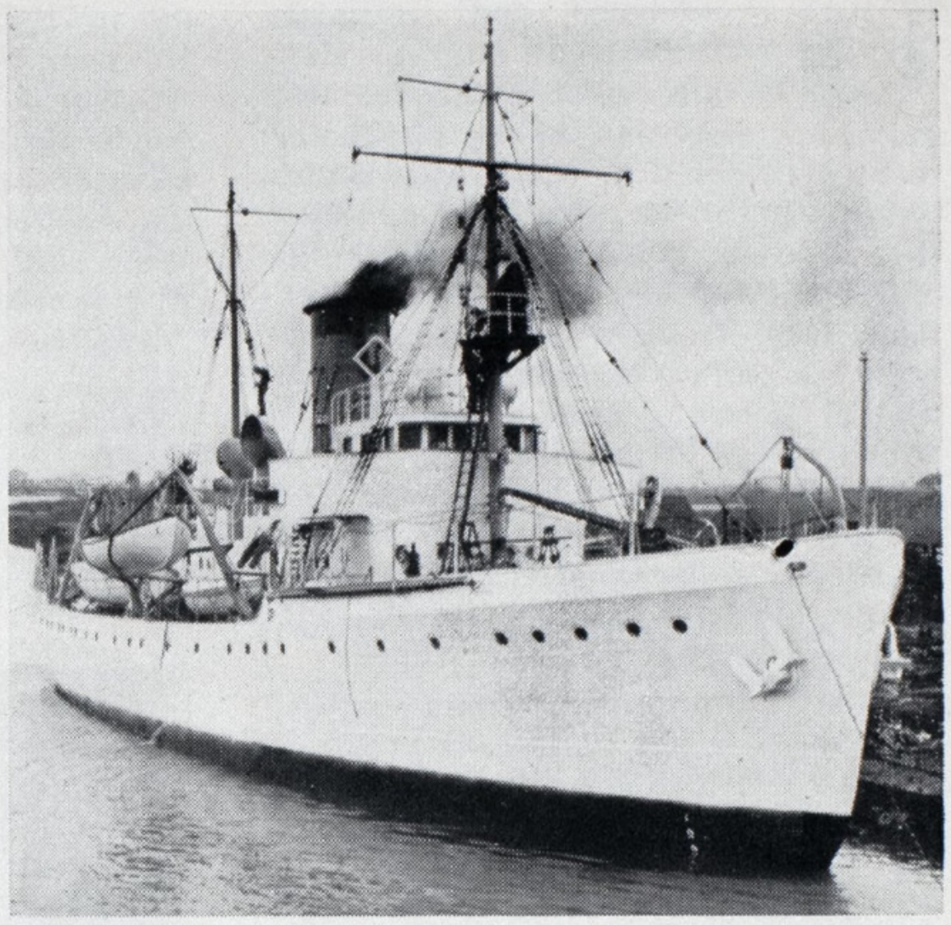
R. Stanley Dollar is one of America's leading shipping men. He is president of the Dollar Steamship Lines, the United States Lines, and the American Mail Line.

ESCANABA, Coast Guard Cutter

Completes Successful Builder's Trials

FOR sometime it had been apparent among those knowing conditions that a new coast guard cutter was needed for service on Lake Michigan. A sum of $650,000 was finally appropriated by congress for the construction of such a vessel. On Jan. 30, 1931, officers of the coast guard, having to do with new construction, including Capt. J. A. Walton, senior machinery constructor, Commander F. A. Hunnewell, in charge of construction, H. F. Johnson, machinery constructor, and E. M. Kent, junior constructor, held a meeting in Cleveland with representatives of vessel owners and others in order to bring out ideas on the proper characteristics of a vessel to best serve the purpose. At that meeting it was decided that the new cutter should have ample power and the size and shape to stand any weather likely to be met with. Furthermore, that she should be built for effective ice breaking. The dimensions mentioned were from 150 to 170 feet in length, from 34 to 36 feet beam, with a maximum draft of 14 feet, and a speed of 15½ miles.

Escanaba, new coast guard cutter for Lake Michigan, showed speed and power on her trials Nov. 17 at Saginaw Bay, Lake Huron. This trim looking vessel is now ready to come to the aid of distressed vessels or, if necessity requires, to act as an ice breaker. She also carries two 5-pounders to back up her authority against law breakers if need be



Launched on Sept. 17

Now that this new coast guard cutter, the ESCANABA has been delivered, it is interesting to note from the accompanying general particulars how closely the final design followed the consensus of opinion at the Cleveland meeting.

Contract for the new vessel was placed in November, 1931 with the Defoe Boat and Motor Works, Bay City, Mich., at a low bid of $408,800. Bids were opened on November 30, 1931, eight bids being received, ranging from the low bid mentioned to a high of $670,000

The ESCANABA was launched on Sept. 17, 1932, and the standardization and full power 4-hour trials were held in Saginaw Bay, Lake Huron, Nov. 17. Shortly afterwards the new vessel was formally delivered to the United States coast guard. In the commissioning ceremony, chief inspector, Commander Harvey F. Johnson turned the ship over to Commander E. C. Perkins, of the United States coast guard.

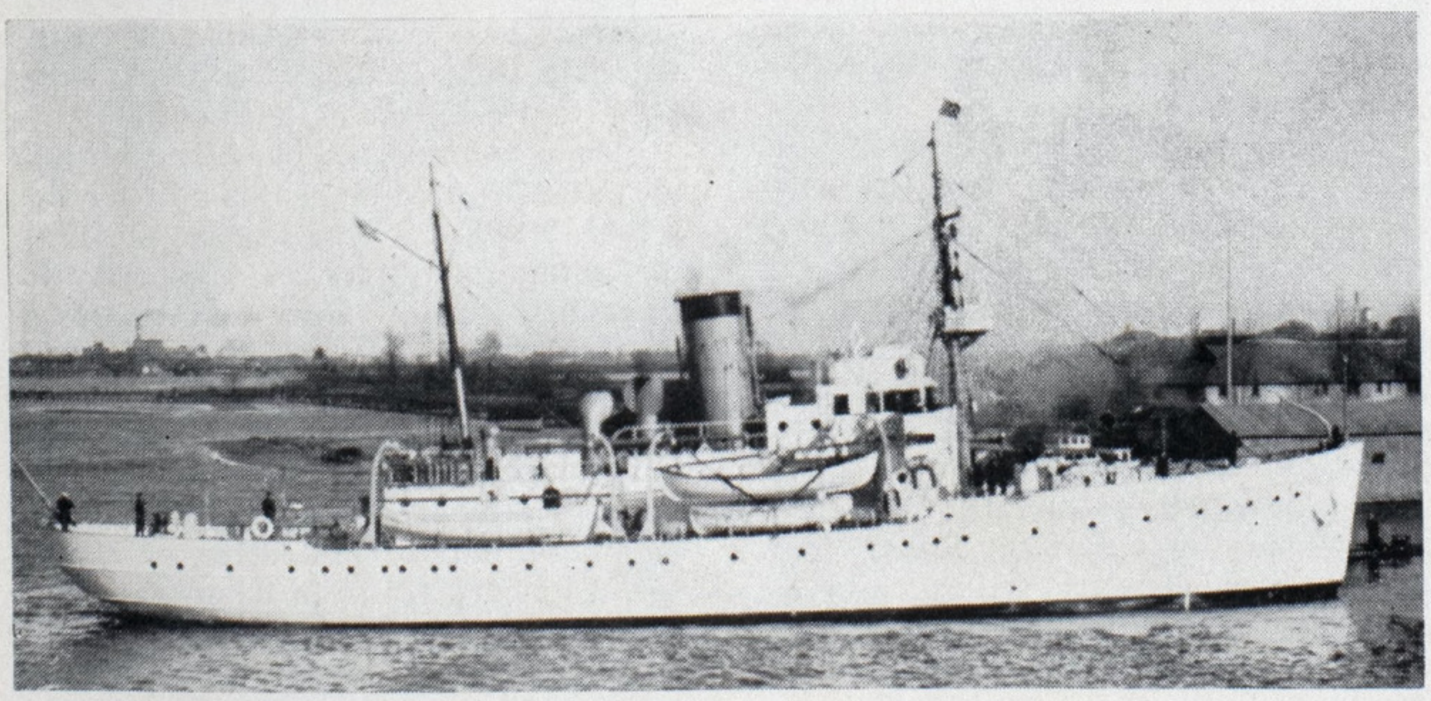
General Particulars

Builder	Defoe Boat and Motor Works
Owner	United States Coast Guard
Contract placed	Nov. 1931
Cost, low bidder	$408,800
Launched	Sept. 17, 1932
Trials, standardization, full power	Nov. 17, 1932
Length overall, feet, inches	165 0
Length between pp., feet, inches	150 0
Beam molded, feet, inches	36 0
Depth, molded, feet, inches	21 0
Draft, designed, mean, feet, inches	12 0
Displacement, loaded, designed, tons	960
Draft, maximum, feet, inches	13 0
Propelling machinery, double reduction geared turbine, single screw, shaft horsepower @ 140 r.p.m.	1500
Boilers, oil burning, watertube	2
Working pressure, at drum, lbs. per sq. in.	340
Steam temperature, degrees Fahr.	650
Superheat, degrees Fahr.	200
Complement	Officers, 5; men, 46
Service, coast guard cutter	Lake Michigan
Speed, miles per hour	15¼

Sea Trials Entirely Successful

Results of the standardization and full power trials are tabulated in an accompanying table. Every requirement was satisfactorily met during the trials. The machinery functioned perfectly and the new vessel not only has a fine trim appearance, but also proved herself an easy, quick maneuvering, able seaboat with ample power and speed. It is difficult to imagine any weather in which this vessel could not give a good account of herself. The builder and the officers of the coast guard, having to do with her design and construction, deserve the highest commendation for having produced a vessel so well fitted for rescue and assistance to vessels in distress and for ice breaking as occasion demands.

The ESCANABA was projected and particularly designed with the view of winter service in Lake Michigan. In addition to regular carferry service across Lake Michigan, there is considerable other winter travel. In severe seasons serious difficulties have been encountered when ships have been caught in the ice. Sometimes it has meant the loss of vessel and lives, but more generally it has meant distress to passengers and



Escanaba, single screw, turbine geared, coast guard cutter, for Lake Michigan

crew in being marooned without supplies for long periods.

Though the new cutter is not primarily an ice crusher in the same sense as are some of the ships used in the Baltic and in other parts of the world, she is, however, what might be termed a medium ice crusher. Her bow and forefoot is so shaped and constructed that she can run up on heavy ice when necessary with the foreward trimming tank empty and then, by quickly filling this large tank, breaking down the ice upon which she rides. The piping to the trimming tank and the pumps serving it have been designed for rapid filling and draining. The waterline strakes, brought down under the forefoot forward, are of ⅞-inch steel to give the necessary strength and resistance for any ice crushing likely to be encountered on the Great Lakes. The entire hull construction including both the framing and plating is much heavier than ordinary practice in a vessel of this size.

To fit this vessel for winter service the entire length of the main deck and all of the living quarters are lined with 2 inches of cork board. This makes an effective insulation against cold. The ship has already met weather down to 10 degrees above zero, and no difficulty has been experienced in maintaining a comfortable temperature.

The main propelling machinery consists of one De Laval turbine connected to a single propeller through double reduction gears. The nominal rating of this turbine at 300 pounds per square inch stream pressure and 200 degrees superheat, exhausting to 27½ inches of vacuum, is 1500 horsepower, at 7500 revolutions per minute and this is reduced to a normal maximum propeller speed of 140 revolutions per minute. The main propelling turbine, gearing and a number of pumps were supplied by the De Laval Steam Turbine Co.

Steam is supplied by two Babcock & Wilcox marine watertube boilers operated at 340 pounds per square inch working pressure at the drum, and with 200 degrees of superheat. The tubes are 2 inches in diameter. An inter-deck superheater is installed in each boiler each having a superheating surface of 222 square feet. The heating surface of each boiler is 2463 square feet. The boilers are oil fired and the fuel used is navy bunker fuel oil. The boilers are fitted with desuperheaters.

Two condensers are fitted; one main and one auxiliary, both supplied by C. H. Wheeler Co. The pumps are steam driven, several of them with turbine drives, others of steam reciprocating type. Pumps were supplied by Warren Steam Pump Co. and De Laval Steam Turbine Co. For supplying electricity there are two turbine driven generators, each of 35 kilowatts capacity.

The windlass and steering engine are electrically operated and were supplied by Lidgerwood Mfg. Co. The towing machine is located aft on the upper deck, and is enclosed in the after end of the house on this deck. This machine, which was supplied by the Lidgerwood Mfg. Co., has been designed to take care of the most difficult tows which the vessel may be called upon to take in the line of its service.

Navigating and ship operating equipment is naturally as complete and modern as possible, and includes a Sperry gyrocompass with repeaters, radio course finder, a Submarine Signal Co. fathometer for automatic depth sounding, Leitz sounding machine and luminous lifebuoys.

Generally in design, the ESCANABA is of substantial steel construction throughout, of the flush upper deck design, straight raked stem and conventional cylindrical overhung stern. Besides the upper deck there is a continuous main deck throughout and an orlop or berth deck from the stem to the forward bulkhead of the boiler room. The boiler room is located practically amidships, and the center of the stack, where it emerges from the house, is just a few inches aft amidships. Crews' and petty officers' quarters are located on the main and berth decks forward. The

Escanaba

Standardization Trials, Nov. 17

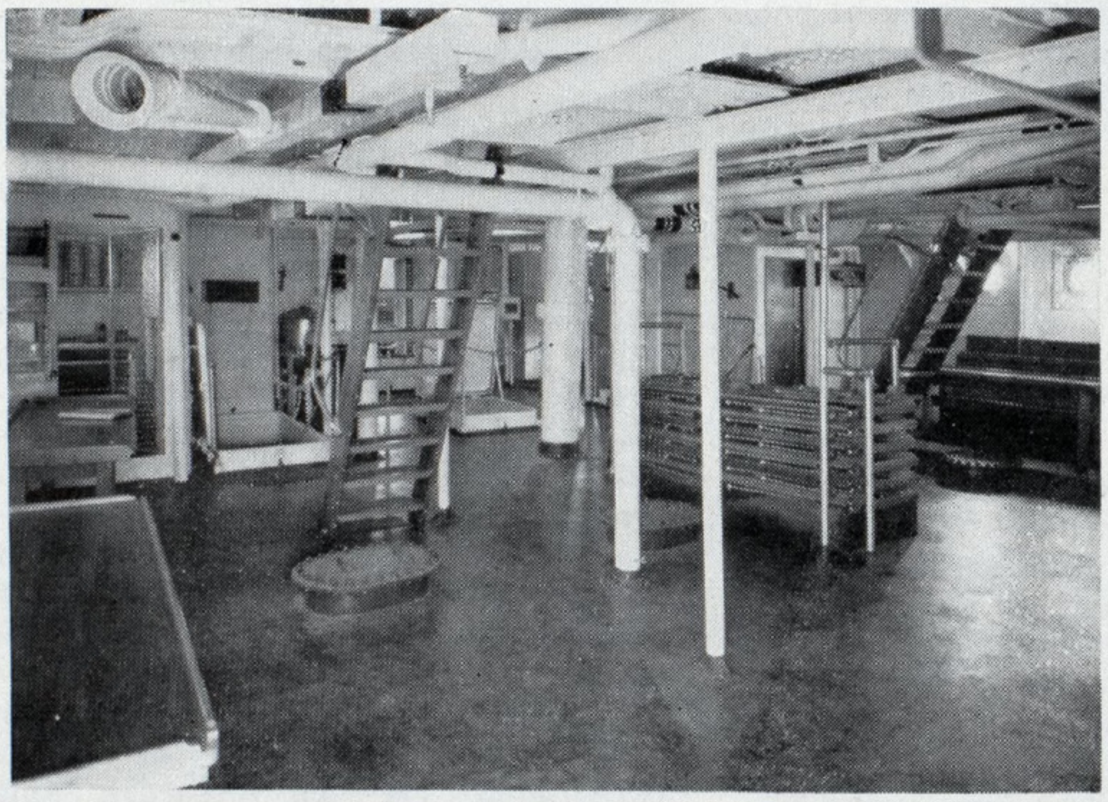
Speed	R.p.m.	Steam Press.	at Throttle Temp.	Vacuum
8.71	75.0	315.7	566.7	27.9
10.93	90.1	327.7	581.7	27.8
12.38	104.2	315.7	606.7	27.7
13.76	121.0	308.3	620.0	29.0
15.35	145.5	308.3	635.0	28.6

Conditions at Trials

	Before For.	Before Aft.	After For.	After Aft.
Draft .ft., in.	11 4½	13 6	11 0	13 4
Water, gals.	18,438		16,722	
Fuel oil, gals.	35,895		33,120	

Note: In the column designations above, speed means miles per hour. On the 4-hour full power trial, the average fuel consumption at an average r.p.m. of 145.5 was 1942.5 pounds per hour for all purposes. Shaft horsepower was not set down in the trial data results. The rated shaft horsepower of the main propulsion turbine is 1500 at 140 r.p.m. It is believed that the shaft horsepower at 145.5 r.p.m. was 1770. The weather during the trial was clear, the wind n.n.e. had a force of 3. The trials were held at Saginaw Bay, on a course 5280 feet in length, laid into wind. The depth of water was 21 fathoms. Fuel oil gravity was 16.33° Be. @ 60° Fahr.

Time from full ahead, 145 r.p.m. to full astern, 152 r.p.m. was 35 seconds. Time from full ahead, 145 r.p.m. till shaft was revolving astern was 9.2 seconds.



Crews' quarters on Escanaba are commodious and comfortable. Cork insulation has been used as protection against cold and sweating

Engine room of the Escanaba turbine geared propelling machinery. A number of turbine driven pumps have been installed. An injector will supply hot water through the fire main for melting ice on decks

ward room is located aft on the main deck. Fuel oil tanks are located between oiltight bulkheads forward of the boiler room. The propelling machinery is located between watertight bulkheads aft of boiler room.

Vessel owners on the Great Lakes have expressed their appreciation of the efficient manner in which the coast guard have met and solved the problem of a suitable vessel designed particularly with the view to its service on Lake Michigan and generally adapted for service anywhere on the Great Lakes, if necessity should require. What is needed now is a similar modern vessel to be stationed on Lake Erie.

Latest Marine Equipment

The auxiliary equipment of this vessel includes some of the most modern marine equipment now available. The feed pumps, two in number, are vertical simplex, double acting reciprocating steam pumps, each having a capacity of 26,000 pounds per hour. These two feed pumps and one fuel oil transverse pump of vertical simplex piston type of 50 gallons per minute capacity at a discharge head of 25 feet, were furnished by Warren Steam Pump Co. One main fuel oil service pump, turbine driven, of screw type, with a capacity of 300 gallons per hour against a discharge head of 300 pounds was supplied by the Quimby Pump Co. For auxiliary fuel oil service, there is one electric motor driven pump with capacity of 120 gallons per hour against a discharge head of 300 pounds, furnished by the Northern Pump Co.

All of the heat transfer equipment was supplied by the Davis Engineering Co., and consists of the following: One feed water heater of a capacity to raise 26,000 pounds of feed water per hour from 80 to 220 degrees Fahr.; two fuel oil heaters of a capacity to raise the temperature of 300 gallons of fuel oil per hour 200 degrees Fahr.; one evaporator with a capacity of 3000 gallons of water per 24 hours; and one distiller with a capacity of 3000 gallons of water per 24 hours.

For supplying compressed air there is one single cylinder, steam driven, double acting reciprocating type compressor with a capacity of 65 cubic feet per minute displacement, delivering air of 170 pounds pressure. This outfit was supplied by the Westinghouse Traction Brake Co. Two turbine driven fans located in the upper fire room with suctions from and discharge into the boiler uptakes and having a capacity of 8000 cubic feet per minute against a static head of 3 inches of water are of Sturtevant make.

The pumping equipment in addition to pumps already mentioned include: One turbine driven propeller type, main circulating; one centrifugal type, electric motor driven, auxiliary circulating; two centrifugal type, electric motor driven, main condensate; one centrifugal type, electric motor driven, auxiliary condensate; one centrifugal type, turbine driven, fire pump; two centrifugal, electric motor driven, lubricating oil; one centrifugal, electric motor driven, bilge pump; one centrifugal, electric motor driven, sanitary pump. All the pumping equipment listed above was supplied by the De Laval Steam Turbine Co. The electric motors were supplied by the Star Electric Motor Co., and the magnetic contactor controls by Cutler-Hammer.

The lubricating oil purifier, of centrifugal type, was supplied by the De Laval Separator Co.

The propeller is of four-bladed type, solid cast manganese bronze of 10 feet 6 inches in diameter and of 10 feet 3 inches pitch. It has a projected area of 35.25 square feet and a developed area of 39.89 square feet. This propeller was designed by the United States coast guard, and made by F. Ferguson and Sons Co. The propeller shafting, of steel forgings with flange couplings forged integral, and of 9 inches diameter for the line and 9¾ inches for the propeller shaft was furnished by the Titusville Forge Co. Stern tube shaft bearings of rubber are fitted, one at the after end of the stern tube and one at the fore end. The bearings take circulating water through a line from the sanitary pump. These bearings are known as the cutless type were furnished by the B. F. Goodrich Rubber Co.

Auxiliaries on Deck

Auxiliaries on deck were supplied by the Lidgerwood Mfg. Co. and include the following: One electric driven spur gear windlass; one electric hydraulic gear of the four-ram type, the hydraulic pump being Waterbury; and one automatic steam towing engine with a minimum rope pull of 25,000 pounds at a speed of 80 feet per minute. The electrical equipment in connection with these deck auxiliaries were supplied by the Electro Dynamic Co., with control equipment of Cutler-Hammer make.

In conjunction with the steam towing machine, 1500 feet of 1½ inch steel towing hawser is used on the drum. Through gearing and clutches the towing machine also drives two gypsy heads outboard of the house inclosure aft. These gypsy heads are used for general working purposes and for hoisting the boats.

The navigating equipment consists of two standard navy compensating magnetic binnacles; one Lietz electric driven sounding machine, and one Walker electric recording taffrail log. All of this equipment was furnished by John E. Hand & Co. The Sperry gyroscopic compass equipment, referred to before, includes a master gyro and six repeaters. There is also one latest type coastwise depth sounding fathometer supplied by Submarine Signal Corp. The Sperry company also supplied three 18-inch incandescent searchlights and one 18-inch high intensity arc searchlight.

Mechanical ventilation is provided throughout the vessel by means of four systems of ducts. Air is forced through each system by four electric driven blowers supplied by the B. F. Sturtevant Co. Refrigeration is provided for two hold storage boxes, one being a meat box in which a temperature of 26 degrees Fahr. is maintained, and the other being a general service box in which a temperature of 38 degrees Fahr. is maintained. These boxes are cooled by two Kelvinator condensing units operating on a dry or direct expansion system in connection with fin coils in the compartments. The operation is fully automatic in keeping the temperatures mentioned. There are three refrigerating cabinets, one each, in the galley, wardroom, and cabin pantries. These are all Westinghouse. One mechanically refrigerated water cooler in the crew's mess room is of General Electric make.

Miscellaneous Equipment

In the miscellaneous equipment supplied on the ESCANABA are: Pilot house window lifts of the screw geared type, supplied by the Kearfott Engineering Co. Running light telltale boards and electric driven clear view screen in pilot house, supplied by Charles Cory Corp. Engine room telegraphs, and synchronous alternating current rudder indicator, supplied by Charles Henschel & Co. Steam heating radiators of copper, of fin type with galvanized metal cabinets, supplied by Erskine Radiator Corp. All electric pyrometers for steam lines and boiler uptakes were supplied by the Brown Instrument Co. All pressure and vacuum gages were supplied by the Consolidated Ashcroft Hancock Co. and the James P. Marsh Corp. The plumbing throughout the vessel in both crew's and officers' quarters were supplied by the Crane Co.

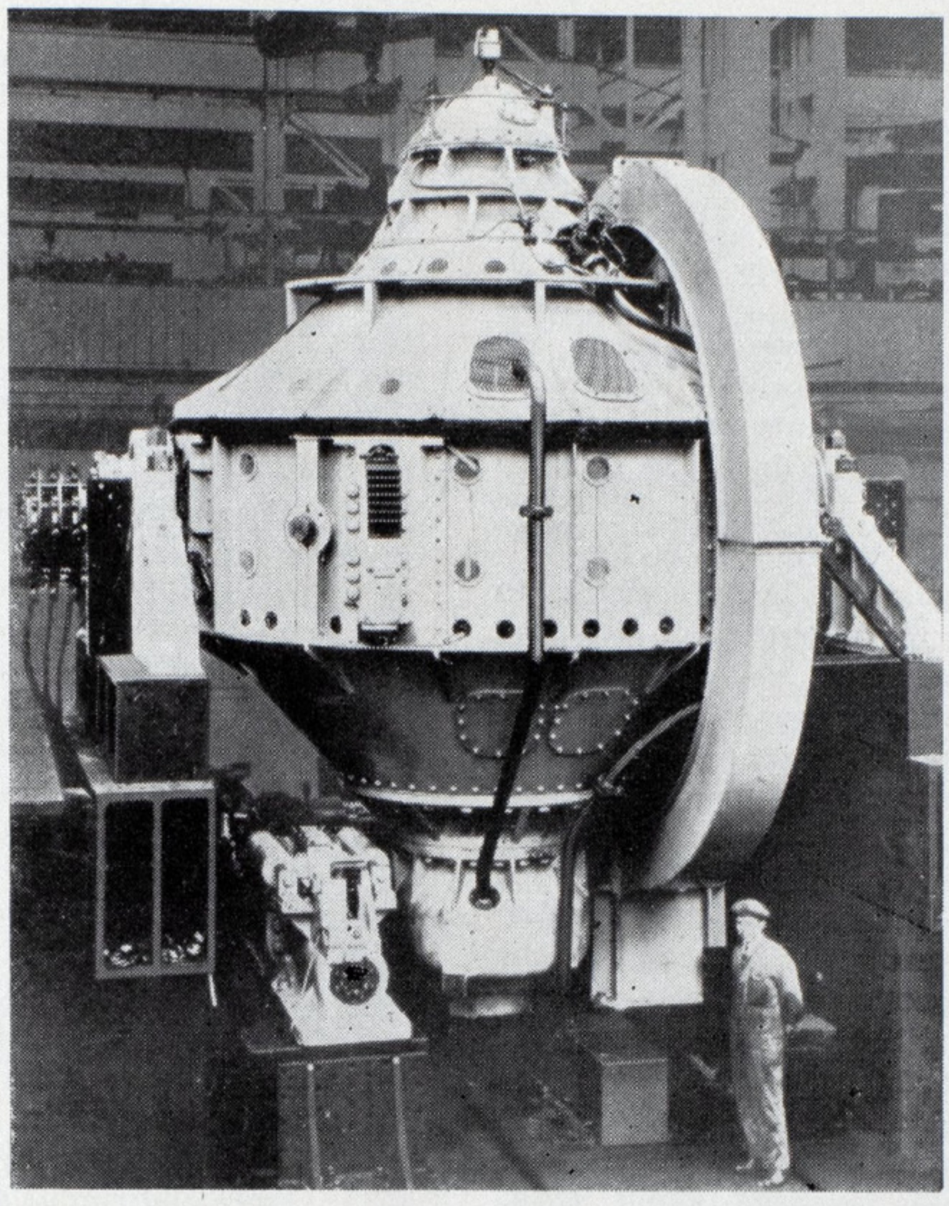
Floor covering material throughout all living spaces of the crew's and officer's quarters is known as linotile and was supplied by the Armstrong Cork Co., and laid by the Turner Resilient Floors Co. All miscellaneous door and builders hardware of polished bronze was supplied by Sargent & Co. The two inches of cork board with which the entire inside of the vessel in all living quarters is ceiled was furnished by the Armstrong Cork Co. The cork is fastened to the steel with waterproof cement.

Conte di Savoia, New Italian Liner

Largest Ship with Gyroscopic Stabilizer

WE ARE so accustomed to think of our own country as enterprising in all mechanical lines that it comes as rather a shock (perhaps a necessary one) to realize that other nations can be even more progressive than we are. In bringing out her two large fast luxurious liners REX and CONTE DI SAVOIA, Italy has demonstrated a high order of initiative and determination. The latest of these two superb liners is unique in being the largest vessel fitted with gyroscopic stabilizer.

In thus having the courage to apply an American device, invented developed and constructed in the United States, and costing about $1,000,000, the Italians have taken a step ahead of the rest of the world in a real effort to provide maximum comfort for sea travelers. The future may well prove, as it did when the British installed turbines in the first transatlantic liners, that this progressive move will be of immediate advantage to the pioneer and later to all others. It can hardly be denied that over a period of years the publicity value alone will be worth more than the cost. During the week of her stay in New York after her maiden voyage, approximately 45,000 persons visited the SAVOIA.



One of the three Sperry Gyro-Stabilizer Units on the Conte di Savoia of the Italian Line

The CONTE DI SAVOIA was built at the San Marco Shipyards, Triesta, Italy. She is of 48,500 gross tons, has a length of 816 feet and a beam of 95 feet, 10 inches. Her motive power is turbine reduction gears developing 120,000 shaft horsepower in four units, driving four propellers. A record was made in the speed with which she was built. Her keel was laid Oct. 4, 1930. She was launched Oct. 28, 1931 and she sailed on her maiden voyage from Genoa bound for New York on Nov. 30, 1932. Arriving at New York on Dec. 7, she made the passing in slightly more than six and a half days.

Before her acceptance exhaustive trials were made including the gyro-stabilizers. Though her required speed is 27 knots, on a two-way run of nine hours each, during her trials, she maintained an average speed of 29.4 knots. If a similar speed could be maintained for 25 hours, on one of her regular crossings, it would be a record for a day's run. On sailing from New York on the second lap of her maiden voyage Dec. 14, the SAVOIA carried 1395 passengers. With the REX the SAVOIA will make the regular run between New York and Gibraltar in five days, to the Riviera in six days, and to Italy in six and a half days, thus reducing the old time to Italy by two days. The SAVOIA is only slightly smaller than the REX and has some 5000 less horsepower.

She is the largest vessel equipped with Sperry gyroscopic stabilizer equipment and she is the forty-second stabilizer installation made by the Sperry company.

The gyroscopic stabilizing plant on the CONTE DI SAVOIA consists of three complete and independent stabilizing units which may be used together or separately according to the weather. Each rotor has a diameter of 13 feet, a width of 44½ inches at its periphery, a weight of 110 long tons, a normal speed of 800 revolutions per minute and a maximum speed of 900 revolutions per minute. The kinetic energy is 4,700,000 foot pounds. The maximum combined gyroscopic stabilizing torque of the three units is 7860 foot tons. The entire plant with all of its auxiliaries weighs 660 tons or a little over 1½ per cent of the ship's displacement.

. The normal power consumption of the stabilizing plant is a total of 1900 horsepower or approximately 1½ per cent of the horsepower of the main engines. The stabilizers are located in a compartment in the hold slightly forward of the forward end of the superstructure. While the stabilizers themselves are located below, the control gyros and the switch and contactor panels are located above on a mezzanine platform. This control platform is arranged to provide a clear view of all parts of the equipment. Convenient access is provided for passengers wishing to see the equipment in operation.

Each gyro stabilizer operator is under the direction of a small, sensitive control gyro. The control gyro responds instantly to the slightest roll of the ship. By processing slightly at the first tendency of the ship to move from a vertical position the control gyro closes an electrical circuit which operates the percession motor. The shaft of this motor, geared to the main stabilizing gyro, tilts it either forward or aft in its gudgeon bearings so that it exerts resistance to the tendency of the ship to move from a vertical position.

Complete and satisfactory tests have been made of the stabilizing equipment. The weather on the first voyage westward of the SAVOIA was so generally good that it wasn't possible to gage in a practical way the full effect that stabilization of the ship will have in increasing comfort.

Government Soon to Retire from Ship Operations

PROSPECTS of the government's early retirement from the field of ship operations are indicated in the sixteenth annual report of the United States shipping board, released for publication Dec. 5. Of the 2546 vessels previously owned by the board, all but 96 have been sold, scrapped, laid up, or otherwise disposed of. These 96 active ships will be sold to private American interests for continued operation, while those laid up (240 on June 30, 1932) will, with few exceptions, be sold for scrap.

As a result of the board's efforts to get the government out of the shipping business, nearly 80 per cent of the ships constituting the American merchant marine, the second largest in the world, are now owned by private American shipping companies. American flag lines, operating in a network of services to all the principal foreign ports, carry about 34 per cent of the country's exports and imports, as contrasted with 10 per cent when the shipping board was first established. Ocean freight and passenger revenues resulting from this immense movement of traffic average about $300,000,000 a year.

Thirty-Seven Vessels Sold

Despite the continuance of the depression in international trade, the shipping board, in the period covered by the report just issued, disposed of 37 vessels for $2,644,687.50. Included in these transactions was the sale of the Mobile Oceanic line and the American Diamond lines, with a combined total of 24 ships. The elimination of another line and the consolidation of two others reduced the number of lines still operated for shipping board account from 13 to 9. Through consolidations of management the number of managing operators was reduced from 12 to 5.

Coincident with this progress toward complete liquidation of its vessel property, the board during the year was able to reduce the personnel of the Merchant Fleet Corp. by 566 employes, involving salaries and wages aggregating nearly a million dollars. Since July 1, 1928, the services of 2037 employes have been dispensed with, resulting in payroll savings of $3,063,309.

The extent to which the board's active ship operations have been curtailed, through sale of ships and services to private interests, is reflected in the appropriations made annually by congress for this purpose for the past several years. For the fiscal year 1928 it was $17,000,000, for 1929 $13,400,000, for 1930 $11,134,250, for 1931 $5,950,000, and for the fiscal year covered by the report just issued it was $1,970,000. For the fiscal year ending June 30, 1933, no appropriation of new funds was made for this purpose. This will result in a reduction in appropriations of $17,000,000 since 1928 and of $50,000,000 since 1924.

Aids Granted to Shipping

The report points out that the aids granted by congress to American shipping in 1928 have enabled the industry to survive the distressing conditions which have prevailed in international trade during the past year. Construction loans have greatly stimulated activity in American shipyards, although the new contracts entered into during the period covered by the report called for considerably less tonnage than those placed during the fiscal year ended June 30, 1931. Advances made from the government's construction loan fund totaled $50,817,809 for the year, as contrasted with $28,704,786 for the fiscal year 1931. Four additional ocean mail contracts, signed during the year, brought the total up to 44 since the passage of the merchant marine act of 1928. These 44 contracts call for the construction of 69 new vessels, including 5 completely rebuilt vessels, and betterments or substitutions affecting 57 vessels. The estimated cost of the new vessels is about $300,000,000, and of the betterments about $22,300,000.

As required by law, the board's annual report contains a number of recommendations to congress looking to the further development of American shipping. Many of these recommendations have been carried in previous board reports, but not having been acted upon are repeated in the report just issued. Some of the specific recommendations deal with the future award of ocean-mail contracts; the enlargement of the construction loan fund; the prohibition of so-called "voyages to nowhere"; additional regulatory authority over common carriers by water; the strengthening of present laws with respect to alien seamen; establishment of foreign trade zones in ports of the United States; abolition of the services maintained by army and navy transports and vessels of the Panama Railroad Steamship line; appropriation of funds to carry into effect the naval reserve act; and ratification of the international convention for safety of life at sea.

The report calls attention to the fact that while the United States is the foremost exporting nation and the principal contributor to international long-voyage passenger traffic, it actually has less shipping in the foreign trade per ton of exports, or per head of population, than has any other commercial maritime power. Notwithstanding the rapid growth of its commercial shipping since the war, its minimum needs, the report points out, are still far from being satisfied in the matter of modern vessels. Six other countries have each launched more tonnage since the merchant marine act of 1928 went into effect than has the United States, while the latter has led the world in scrapping ocean going cargo ships since the war.

The report uses these facts as an argument against joining in any international scrapping or laying up agreements, such as have been proposed from time to time. It states that the United States cannot become a party to any agreement of this sort without sacrificing some of the gains already made in building up its commercial shipping.

Business Increase Noted on Luckenbach Lines

Eastbound freight traffic of the Luckenbach Steamship lines, in the North Atlantic service during October last year exceeded by 16,653 tons the tonnage carried during the record month of October, 1928, according to an announcement by Lewis Luckenbach, vice president. In the Luckenbach Gulf service the high mark of October, 1928, was exceeded by a slight margin and the companies report an unusual increase during the eight weeks up to Dec. 1 in goods carried in Luckenbach ships from Boston, New York and Philadelphia to Pacific coast cities, especially in package goods.

It is Mr. Luckenbach's belief that this is not a mere flurry but an indication of the nationwide re-awakening of American business. He states that the movement of freight from Pacific coast ports, particularly of dried fruits and canned goods, started six weeks earlier than the usual seasonal rush and shows no signs of diminishing.

The one soft spot in the trade was the lack of shipments of lumber from Northwest ports probably due to the stagnation in building throughout the country.

Gould's Pumps Inc., Seneca Falls, N. Y., acquired the Hydroll Corp., Lebanon, Ind., manufacturer of oil purifying apparatus. The Lebanon plant will be discontinued and the business and equipment transferred to the Seneca Falls plant of the Gould company. D. B. Clark, vice president of Hydroil and W. P. Alexander, factory and field representative, join the Gould staff.

Improvements in Marine Engineering

Older Ships Unable to Meet Competition

By D. W. Niven*

THE problem of conducting a business profitably on a reduced volume basis has confronted the shipowner, shipbuilder, and manufacturer of marine machinery during the past year. It has been a year of questioning as to what is sound and what unsound—of true values, and of false hopes. In reviewing the material advancements, it is noticeable that the projects completed have been those started during the previous year. Very little outstanding new business has been booked, and plans of a constructive nature which have been made for the future, have been temporarily set aside, to await the return of normal times.

A survey of marine transportation, in general, shows its needs and shortcomings to be greater than ever before, with the gap between the new and the old widening with each year of inaction. Both the obsolete and idle tonnage, for which no useful purpose has been found, has acted as a deterrent to the building of the new ships required to keep the fleets modern, and to the repair of the old to keep them seaworthy. These relics of the past are held on to with the hope that a return to old conditions will bring rich rewards. That evolution will slip a few cogs and turn backward to catch up with the old, rather than advance to keep pace with the new seems doubtful. A large part of the future problem lies in the disposal of this obsolete tonnage so that the decks may be cleared for future action and advancement.

Higher Speed, Better Service

New ship types are slowly rising above the wreckage of the past. The tramp freight ship is passing out of the picture and one might reasonably ask if such vessels were not simply a phase in the evolution of shipping. The slow line freight ship is also finding its field more restricted. Both types are being superseded by the all-service type of ship of much higher speed. Ships of the latter type that can accommodate passengers and transport both freight and refrigerated cargo have the better opportunity for survival, because of their broader field of activity.

The strictly passenger liner encompasses a very small field and each year sees the increasing difficulty of operating such vessels on one given trade route throughout the seasons. The fact that such ships are compelled to engage in week-end excursion trips and short yachting cruises shows that they are going through a process of evolution to conform to artificially created demands. What type of ship will eventually be evolved to take care of these altogether different activities is not certain.

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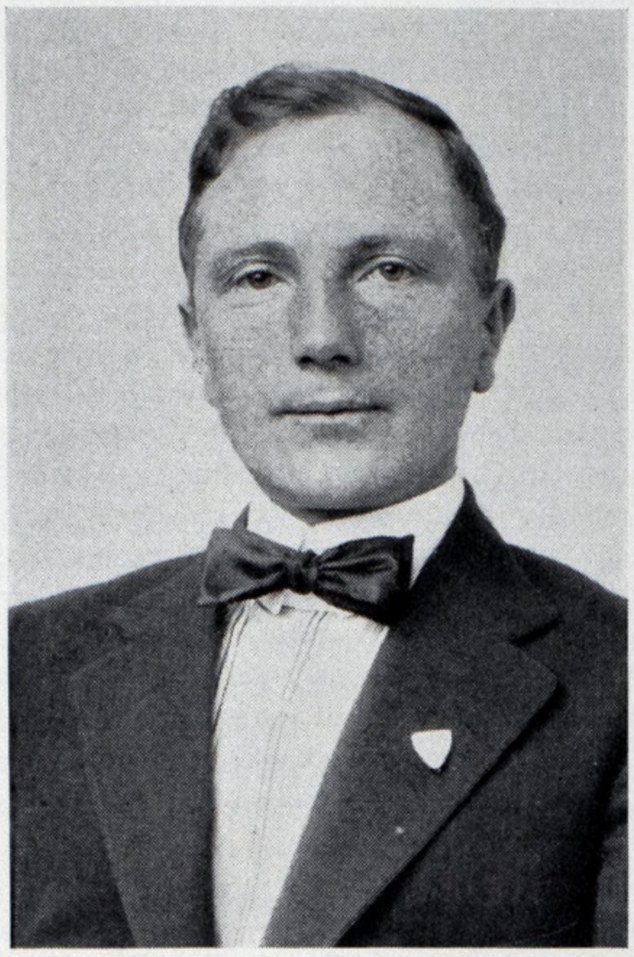


A SURVEY of recent construction makes it apparent that the newer engineering has but scratched the surface. Material progress in the aggregate has not kept pace with the sound economic engineering practices already established, nor has there been that forward looking tendency from all sides that one might so readily expect. Paying for modernization without getting it is a costly procedure, and ships that are built without taking advantage of the best that the present has to offer are outmoded before their completion. It may be said that greater care must be exercised on the part of shipowners than ever before if they are to build that which is lasting, for the gap between the new and the old is becoming wider with every improvement.

The Author

There is encouragement in the future, if one looks at the magnitude of the job ahead. Many new all-service ships will be required in the immediate future to replace tonnage that has been outmoded by time. Reconditioning of ships to fulfill a larger measure of service and for higher speeds must soon be undertaken if they are to remain competitive. Renewals and repairs must be undertaken on our harbor, coastwise and inland waterway craft, which are now several years behind in such matters. Except for the modern ships, which have been launched during the past five years, the upbuilding of our merchant marine must be started anew. Our war-time-built tonnage, upon which we have placed almost complete dependance in the past, is no longer capable of standing alone in the field of open competition. Engineering has advanced at too rapid a pace to permit this.

Advance in Marine Engineering

Reviewing the field of marine engineering, a continuous advancement can be noted. Propelling equipment has attained new heights of efficiency. High steam pressures and temperatures are coming into wider use. A better co-ordination exists between the main and auxiliary equipments, and more attention is being given to heat balance and the avoidance of waste. Regenerative cycles are being included in new installation work, either in the form of series feed water heating by the extraction method, or, by the salvage of the low-head heat in the stack gases by means of air preheaters or economizers. There has also been a definite trend towards the more complete use of electric auxiliaries, and the generation of auxiliary power by the main propelling machinery where the type of drive makes this permissible. Electric welding has continued to advance and both the technique and method of application have shown constant improvement. A further increase in its uses for purposes of weight reduction and strengthening of

hull structure will gradually be effected as new and sound methods are evolved through research and study.

The work undertaken during the year, which involved the building of turbine electric propelling equipments for six ships, turbine gear propelling equipments for four ships, and several highly interesting electric-auxiliary installations, is described in the following text.

Turbine Electric Drive Ships

Five of the six practically duplicate ships of the combination passenger-cargo type built for the United Mail Steamship Co., a subsidiary of the United Fruit Co., were placed in service during the year. The sixth vessel, the PETEN (ex-SEGOVIA), is rapidly nearing completion and will be commissioned in the spring of 1933. Three ships, namely, the TALAMANCA, CHIRIQUI, and PETEN, are products of the Newport News Shipbuilding & Dry Dock Co., and three ships, the ANTIGUA, QUIRIGUA, and VERAGUA, of the Quincy, Mass., plant of the Bethlehem Shipbuilding Corp. Ltd.

The ships are specially designed to popularize tourist cruises in the Caribean and Central American countries in conjunction with commercial purposes, such as the carriage of mail, general cargo and tropical fruits.

The passenger accommodations are luxurious in their appointments and special care has been exercised to afford maximum comfort in both tropical and northern latitudes. The holds of the vessel, with the exception of the small space devoted to the storage of mail and baggage, are given over to refrigerated cargo space for the carriage of tropical fruits on northbound passages. Sixteen compartments are provided, two of which are equipped for below-freezing temperatures.

Turbine electric propulsion was selected by the owners because of their previous knowledge of the drive, its adaptability to the service, and its proven low cost of upkeep. The trade routes, which call for operation at reduced speeds between ports of call in southern latitudes, require an installation of great flexibility and one having high economy over wide powering ranges. In considering the average load factor and the percentage of time that one-half of the generating equipments could be closed down with their attendant auxiliaries, it was evident that electric drive was excellently fitted for the service. From a further consideration of the load factor, it was also apparent that the inclusion of extreme measures for further reducing the fuel consumption was not warranted when equated on the basis of capital charges and cost of upkeep. Each factor was weighed on its own economic merits and a combination of design elements chosen with respect to overall results.

The main propelling equipment on each ship consists of two main turbine generators, each rated 4200 kilowatt, 3500 revolutions per minute, 3150 volts, 3 phase, unity power factor; two propelling motors of the synchronous type, each rated 5250 horsepower, 125 revolutions per minute, and one main operating panel and control group. The turbines are of the General Electric impulse type with 14 stages, and are mounted directly above their respective condensers. The main generators and propelling motors are of the totally enclosed type with air cooler arrangement. This feature makes it possible to closely control the temperature of the windings and also prevents the deposit of dust or other foreign material on the windings.

The auxiliary generating plant consists of three turbine-driven, direct current generators, each rated 500 kilowatts, 3 wire, 120/240 volts. Each set consists of a 4779 revolutions per minute, 5 stage condensing turbine driving a generator through a reduction gear at 900 revolutions per minute. One condenser serves the three machines and provision is also made for exhausting into the main condenser at sea, thus permitting of the closing down of the auxiliary condenser under normal steaming conditions.

Below Deck Auxiliaries

The below deck auxiliaries consist of 45 motor-driven applications in the engine and fire rooms, 22 motor-driven cargo cooling fans, and 23 fans for ventilating the hull and quarters. The above deck auxiliaries, consisting of capstans, anchor windlass, warping winch, boat winches, and cargo winches are also completely electrified. Motors of the enclosed ventilated type with automatic type of starters and wide field control by means of field regulation, are used almost entirely for below deck service. Motors of the totally-enclosed, waterproof type are used for above deck service.

In reviewing the installations on these ships, it is difficult to foresee in just what direction future improvements could be made. Every possible measure has been applied to make these ships the gems in their class, and their already growing popularity predicts even greater success for the future.

The transatlantic super liner NORMANDIE building for the French line was launched during the year and has been slated for commissioning in 1934. She is both the largest and the highest powered passenger ship of all time, and also the first ship to exceed 1000 feet in length.

The propelling equipment which is being furnished by Astholm of France, an affiliated company of the General Electric Co., consists of four turbine-driven alternators, and four propelling motors of the synchronous type having a normal total horsepower output of 160,000. The propelling motors are the largest ever built for any type of service either ashore or afloat. The ship will naturally hold great interest for many years to come.

The S. S. SANTA ROSA, first of four sister ships to be completed by the Federal Shipbuilding & Dry Dock Co. for the Panama Mail fleet of the Grace line, sailed on her maiden voyage Nov. 26, 1932. The three remaining ships, the SANTA PAULA, SANTA LUCIA and SANTA ELENA, which were nearing completion at the close of the year, have been scheduled for their maiden voyages in January, February and April of 1933, respectively. These ships, which are of the twin screw, combination, passenger-cargo type, are specially designed for operation between the east and west coasts of the United States via the Panama canal, and intermediate points in Central America and West Indies.

From the standpoint of co-ordinated and modern engineering practices, the main and auxiliary power plants are of the most advanced design and combine all of the elements which tend to produce a high overall efficiency, such as high pressure, high temperature steam, complete auxiliary electrification and feed water heating by the series extraction method.

Turbines, Double Reduction Gears

The main propelling plant on each ship consists of two double reduction turbine gear sets of General Electric type, each rated 6000 horsepower normal, and 6600 horsepower maximum, at a propeller speed of 95 to 98 revolutions per minute, respectively. The reversing elements which are incorporated in each low pressure casing are designed to deliver 80 per cent of normal ahead torque. The steam conditions at the turbine throttle are 375 pounds gage pressure and 300 degrees Fahr. superheat. The turbines are divided into a high pressure element, which revolves at 4500 revolutions per minute and a low pressure element, which revolves at 3500 revolutions per minute. The low pressure element of each unit is designed for the additional power capacity required to drive a 500 kilowatt direct current auxiliary generator from an extension of the low speed pinion. Under normal steaming conditions and at speeds of from 70 to 100 per cent, these auxiliary generators furnish all of the auxiliary power. Each unit delivers its power to a separate bus.

A turbine-driven auxiliary generator of 500 kilowatt capacity acts as a standby unit for each bus, and an automatic change-over device is provided for shifting the load when the speed of the main unit drops below the prescribed 70 per cent speed. The standby sets are motored by their own generators at about 95 per cent speed when acting as standbys and the turbines operated with closed throttle on vacuum. An additional turbine-

driven auxiliary generator of 200 kilowatt capacity is also provided for use either as a standby or for port conditions. Each of the turbine-driven sets is provided with its own condenser.

The auxiliary electrification is one of the most complete ever attempted in marine service. The below-deck-auxiliary motors are practically all of the enclosed-ventilated type and provided with automatic starters and a wide speed control by means of field regulation. The above deck auxiliaries consisting of the anchor windlass, capstan, boat hoists and cargo winches, are all electrically driven. The motors are of the totally enclosed type and furnished with automatic type of control. The winches, ten of which are of 3-ton capacity and four of 5-ton capacity are of the worm gear noiseless type with five speeds in both the hoisting and lowering direction.

Other departments of the ship have made full use of electrical apparatus for promoting safety, comfort and economy. The thermo tank system of heating and ventilation is used for controlling the temperature of the air and 52 motor driven fans, having a total capacity of 170,000 cubic feet of air per minute, are used for the ventilation of the cargo holds, hull, and living quarters. In addition to the foregoing, there are also 200 bracket fans situated in the various staterooms and public spaces.

The SANTA ROSA and its sister ships portray the great advancement made in marine engineering during the past ten years, and as far as one can foresee, such ships are not to be outmoded for many years to come.

Diesel Electric Drive

Diesel electric drive was adopted for the first time by the United States navy, when it launched the yard tug 119 from its Charlestown navy yard at Boston. The tugboat, which is 100 feet in length and built specially for harbor work on the Atlantic coast, is powered by means of two main diesel engine-driven generators of the separately excited type, each rated 260 kilowatt, 300 revolutions per minute, 250 volts, and two direct connected, compound wound generators, each rated 35 kilowatt, 125 volts. The latter furnish power for both excitation and the ship's auxiliaries. The propelling motor is of the double type, rated 640 shaft horsepower total, and drives a single propeller shaft at 125 revolutions per minute. The control is of the conventional variable voltage type with stations in both pilot house and engine room.

The lighthouse tender WISTARIA, which is similar to the LINDEN and COLUMBINE previously commissioned, was completed during the year. The main power plant consists of two diesel engine driven generators, each rated 100 kilowatt, 400 revolutions per minute, 250-volt, compound wound, ane one propelling motor of the double type rated 240 shaft horsepower total, 350 revolutions per minute, 500-volt. The main generators operate at constant potential and provision is made so that the auxiliary power can be taken from either generator. A motor generator set is provided for the reduced voltage required by the lights while underway. For standby conditions at port, such power may be taken from batteries, from an installed separately driven standby set, or, from short connections for which provision has been made.

Reconditioned Cargo Ships

The main propulsion units of eight cargo ships of the Hog Island type were rebuilt during the year to accommodate an increase in power of from 2500 to 3140, and an increase in propeller speed of from 90 to 100. Changes in the hull structure were made, which in conjunction with the increased power, give the ships a service speed of 13.5 knots. Other changes included the addition of limited passenger quarters and refrigerated cargo space. The eight ships upon which work was conducted during the year completes a program which involved a total of 22 ships.

Six of the recently reconditioned ships are operated by the Black Diamond Steamship Corp., and have been renamed the BLACK HERON, BLACK EAGLE, BLACK GULL, BLACK TERN, BLACK HAWK, and BLACK FALCON, and two ships, namely the DELMUNDO and DELVALLE, are operated by the Mississippi Shipping Co.

In addition to the auxiliary installations referred to in connection with the turbine electric and turbine gear drive ships previously described, a number of installations were made during the year which showed a decided progressive trend and advancement along new lines. Among these may be mentioned the complete auxiliary installations on the SEATRAIN NEW YORK and SEATRAIN HAVANA, which are the first seagoing vessels to adopt alternating current motors exclusively for auxiliary purposes. In the past, such applications have either been confined to a relatively few Great Lakes vessels of special type, or to installations in which both direct current and alternating current motors have been used.

Auxiliary Installations

The speed characteristics of alternating current motors, which were considered insurmountable difficulties in the past, have been overcome to a great extent through the use of gear type motors (motors furnished with built in reduction gears), multispeed motors in which pole changing is used and motors of the wound rotor, slip ring type. In the installations on the SEATRAINS, all three types of motors were used.

The design characteristics of alternating current motors make them very desirable for below deck service on ships. The elimination of commutators and brush rigging, the ease with which they maye be thrown across the line in starting without elaborate control devices, the light weight, smaller dimensions, lower first cost, reduction in number of spare parts, and lower cost of upkeep are all in their favor. Except for the application to deck auxiliary equipment in which graduated speed control is essential, the advantages may more than offset the disadvantages, and every ship installation of the future, therefore, becomes worthy of study. The mechanical features required to make the general service type of alternat ng current motor, such as is used in land service, applicable to marine service, have been developed. These features include such items as marine type insulation, design for satisfactory operation at a tilt, inclusion of watertight connection boxes, and the proper shielding to prevent damage by falling liquids or solids.

The installations on the SEATRAINS consists of two turbine driven, alternating current generators, each rated 250 kilivolt amperes, 1200 revolutions per minute, 8 p.f., 240-volt, 3-phase, 60-cycle. Direct current exciters are mounted on an extension of such generator shaft.

Constant Speed Motors

The majority of the motors used are of the constant-speed squirrel-cage type, the exceptions being the motors furnished for driving the forced draft fans, fuel oil service pumps, and shaft turning gear. In the case of the forced draft fans and fuel oil service pumps, multi-speed motors with pole changing features are used. The motors driving the forced draft fans have two speeds, 1200 and 900 revolutions per minute, and the motors driving the fuel oil pumps four speeds, 1200, 900, 660 and 450 revolutions per minute. The motors for driving the shaft turning gear are of the slip ring, wound rotor type and can be graduated in speeds up to 1200 revolutions per minute, through the introduction of external resistance in the rotor circuit.

The starting control equipments for all motors are of the magnetic across-the-line type. Remote control, start-stop push button stations are also provided. A control, which consists of contactors switch and temperature overload relay only, is contained in a drip-proof metal case with provision for operating the switch without opening the door to the case. A drum type pole changing switch is provided for the fuel oil service pump. The voltage is reduced from 240 to 120 for the lighting circuits by means of transformers and additional transformers are also supplied for reducing the voltage to 30 for the searchlights. The searchlights are of the General Electric in-

candescent type and each rated 3,560,000 candlepower, 900 watt.

Two highly interesting auxiliary power installations were made during the year in the twin screw, diesel driven, river towboats HUCKELBERRY FINN and TOM SAWYER, that are not only unique in themselves but also present a fundamental powering plan showing great promise for future development and application. In a careful evaluation of the operating conditions, costs, weights, and space available, it was found desirable to dispense with prime movers for the auxiliary generators as far as possible and to make use of the main propelling units for the purpose, if found practicable. The fact that the boats were to be operated at varying speeds and subject to reversal for long periods required that the installation have the greatest flexibility and be more or less automatic in its operation.

The plan finally evolved was a combination of three auxiliary direct current generators, two to be driven from the propeller shafts by means of belt drive, and one by a diesel engine for standby, peak loads, and port use, with a storage battery floated on the line. The condition of operation stipulated that the belt-driven sets be capable of generating their rated output at from 58 to 100 per cent speed, in either direction of rotation, serve in the dual capacity of power units and trickle chargers to the batteries while underway, automatically disconnect from the line and transfer the load to the battery when the speed dropped below 58 per cent, return themselves to the line when the speed was resumed, and automatically switch the connections during reversal of the main units. In addition to the foregoing, the three generating units were to be capable of being paralleled on the line and automatically maintain constant voltage.

The equipment furnished, which accomplished all of the foregoing objectives consists of two 30 kilowatts, 700/1200 revolutions per minute, 120/135-volt, shunt wound generators, arranged for either ahead or astern operation by means of field reversing switches mounted on the ends of the generator shaft; one 30 kilowatts, 700 revolution per minute 120/135-volt shunt wound generator for direct connection to an auxiliary diesel engine; and a switchboard made up of six sections.

An experimental system of electric drive was made during the year on a road type of ferry accommodating 12 cars, and operating across the Sacramento river near Prinecton, Calif. A motor drive was substituted for the usual type of gasoline engine drive, and the power taken from a trolley wire which was suspended across the river. The trolley wire is designed so that it can be lowered to the bed of the river to allow river traffic to pass, and to automatically shut off the current when a short circuit occurs upon contact with the water. The installation which is municipally operated and maintained by Gleen and Colusa counties, received approval of the industrial accident commission and the railroad commission of California. The operating costs proved to be about one-half that incurred with gasoline engine drive, and the installation has created a great deal of interest among ferryboat operators.

The possibility of stabilizing large ships by means of a new type of thyratron tube control equipment utilizing vacuum tubes and a small gyroscope, was discussed by Dr. E. F. W. Alexanderson, consulting engineer of the General Electric Co., during the year before members of the American Society of Naval Engineers. Experimental work was also carried out on a sonic locator, or echo ear, for use by ships in a fog. The apparatus reveals the location of ships that are invisible, of shore lines, and even of floating objects as small as a rowboat or buoy. The principle upon which the sonic locator operates is the measurement of distance through a determination of the exact length of time that it takes for an echo to return from a whistle blast. The apparatus also serves as a direction finder.

Continued research has been conducted during the year into the application problems involved in further increasing the overall economies of marine steam plants. A few of the investigations so made concern the use of high pressure, high temperature steam, the adoption of higher turbine speeds, the attainment of more effective heat balances, a better coordination of the main and auxiliary power equipment, the use of alternating current motors for auxiliary drives, and ways and means of effecting weight and cost reduction of the equipments. From the studies so made, it appears that even greater economies than those so far established are possible.

Port of Boston Trade Continues Steady

Port figures for the ten months of 1932 ending Oct. 31, available at the maritime association of the port of Boston, show an increase of 4525 in the number of passengers arriving from foreign ports in comparison with the same period in 1931. This year arrivals from overseas or transatlantic countries were 7497, from Newfoundland 388, from Canada 31,583, and from the West Indies, Central America and Bermuda 5223, a total of 44,691 passengers. Last year, overseas arrivals numbered 6296, Newfoundland 756, Canada 30,252, and West Indies, Central America and Bermuda 2862. A slight falling off in the number of arrivals for the ten months is noted in the figures. This year, there arrived from foreign ports 1201 steamers, 90 schooners and gasoline boats and nine airplanes, a total of 1300. For the corresponding period last year, arrivals were 1208 steamers, 114 schooners and gasoline boats, and nine airplanes, a total of 1331.

Apple exports from Boston so far this year have been substantially more than during the corresponding period of the past five years. Up to the present, this year 21,687 boxes and 6270 barrels have been shipped from here to England and Germany, compared with 1947 boxes and 866 barrels for the same period a year ago. The increase is largely due to the campaign inaugurated by Frank S. Davis, manager of the Maritime association, to stimulate the interest of New England growers in preparing their fruit so that it would meet the requirements of foreign buyers. In his efforts, Mr. Davis has had the hearty co-operation of the state departments of agriculture, the New England Agricultural colleges, and the steamship lines operating out of this port. It has been stated that, on account of improved quality, the prices paid for New England apples abroad compare favorably with the prices paid for fruit from other sections of the country.

Ask Shipping Regulation

It is the opinion of coastal and intercoastal shipping men that the shipping act of 1916 should be amended as promptly as possible at this session of congress to place domestic marine carriers under the regulation of the shipping board. This opinion was expressed on Dec. 9 by Lewis Luckenbach, vice president of the Luckenbach Steamship Lines, owning 21 freight ships plying between Atlantic, Gulf and Pacific ports.

This bill was passed by the senate last June but was not acted on by the house, having been referred to the committee on merchant marine, radio and fisheries.

"The federal regulation of our coastal and intercoastal shipping is earnestly desired by practically the entire domestic shipping world and has been publicly endorsed and recommended by the shipping board," said Mr. Luckenbach. He continued, "Immediate favorable action by the House on this bill, already passed after long study by the senate, would be beneficial to the entire nation. It will allow water carriers and rail roads to stabilize their affairs with a definite knowledge of competitive rates, which would be of great mutual benefit."

The directors of the Todd Shipyards Corp. at their monthly meeting declared a quarterly dividend of 25 cents per share, payable on Dec. 20 to stockholders of record Dec. 5.

New Orleans Port Business Shows Improvement

The business of the port of New Orleans continues to show encouraging improvement according to figures compiled by the dock board.

During the month of October ocean going vessels arriving had a total gross tonnage of 780,853 tons. This was an increase of 3316 tons over October, 1931 and 27,948 tons over September, 1932.

There were 173 arrivals and 184 departures of ocean going vessels during the month.

Vessels using the public wharves during the month totalled 721,595 tons, an increase of 43,693 tons over October, 1931 and 114,848 tons over September, 1932, a very considerable increase.

During the month there were 278,995 tons of cargo paying tollage, an increase of 5024 tons over October, 1931 and 103,817 tons over September, 1932.

Notable increases were recorded during the month in many commodities moving over the port's modern wharves. Among the exports textiles increased 35,978 tons and miscellaneous freight increased 1470 tons. Among the imports vegetable food products increased 15,604 tons, textiles increased 5514 tons, miscellaneous freight increased 1030 tons, animals and animal products increased 930 tons, and chemicals increased 661 tons.

The dock board's conveyors handled 943,095 bunches of bananas during the month.

Lurline Has Sea Trials, Will Sail Jan. 12

The LURLINE, third and last of the three new liners, built at a total cost of $25,000,000 by the Bethlehem Shipbuilding Corp., at Quincy, Mass., for the Matson Navigation Co., left the builder's yard on Dec. 20 for her official sea trials off Rockland, Me. The new vessel will be put through standardization and speed runs over the navy's measured mile course. As this is written no reports had been received as to the results.

It is expected that the LURLINE will arrive in New York harbor on Jan. 9, and she is scheduled to sail from that port on Jan. 12 on a cruise to the Pacific coast and South seas.

A Train Ferry for China Built in England

THE CHANGKIANG, a twin screw ferry steamer recently completed at the Neptune Works of Swan, Hunter & Wigham Richardson Ltd., for the ministry of railways of the Republic of China, was ordered through the Chinese government purchasing commission in London, from the Boxer indemnity funds. This interesting ship is designed to carry passenger and freight trains across the Yangtse river between Nanking and Pukow. The ship and propelling machinery have been built under the the supervision of Sir John H. Biles & Co., London.

The principal dimensions are about 372 feet overall, an extreme breadth over the belting of 58½ feet. Hull and machinery have been built under Lloyd's special survey for class 100 A-1. The ship is designed to carry a total live load of about 1200 tons, and a total deadweight of 1550 tons.

On the upper deck there are three clear lengths of car track, each 300 feet long, taking in all three trains each of seven cars, a total of 21 cars. The cars will be shipped from the forward end, the connection between the shore and the ship being made by an approach bridge of four spans about 20 feet wide between the trusses, and widening out on the river with an apron joining the lengths of track on the deck of the ship.

The operation of loading the cars will be by a shunting locomotive carried on the ferry at the after end of the upper deck, working in conjunction with traversing gear, by means of which the locomotive may be moved horizontally across the deck to enable it to operate on any of the three lines of rails.

To facilitate berthing there is, in addition to the after steering arrangements—a bow rudder with its independent steam steering gear for use in maneuvering in and out of the berthed positions.

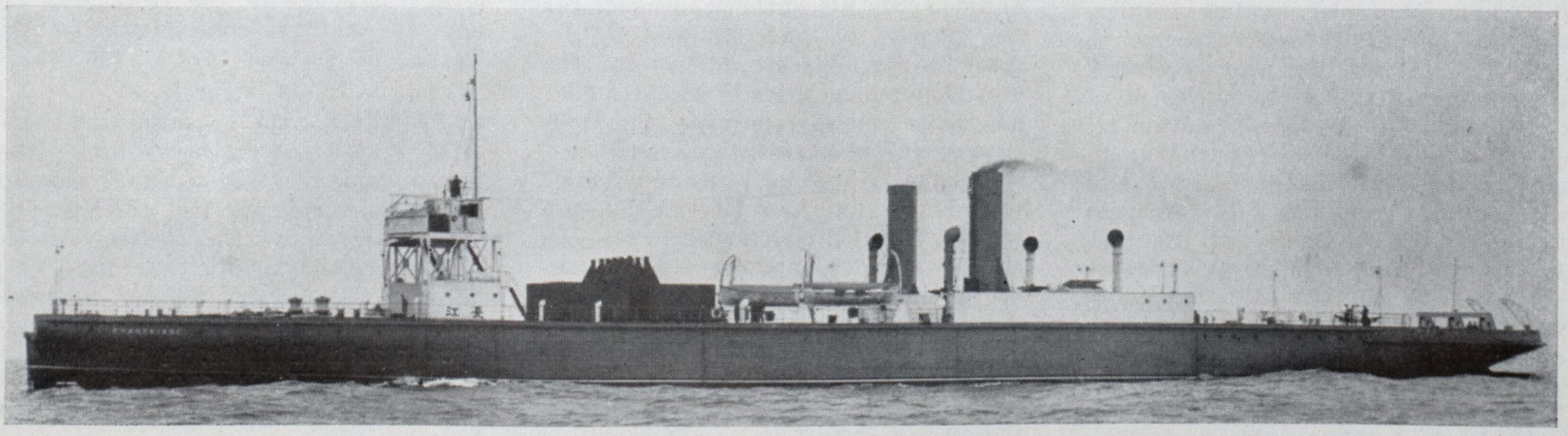
The propelling machinery is amidships with the casings arranged at the sides of the upper deck, and a coal bunker is provided in a recess between the two boilers. The hull is exceptionally well subdivided by watertight bulkheads extending to the height of the upper deck.

Substantial wood fenders are fitted at the level of the upper deck, and similar fenders are carried round the bow and stern.

The navigating bridge is mounted at a level giving a commanding view above the trains, and extends the full width of the ship. The captain's accommodation is fitted on this bridge.

Deck machinery includes steam steering gears of the Wilson Pirrie type both forward and aft, both gears controlled by telemotor from the navigating bridge; two steam capstan windlasses forward; two warping capstans aft; steam driven traversing gear, and electric lighting throughout the ship including flood lights for the car deck.

The twin screw propelling engines are of the three cylinder, triple expansion, surface condensing type with independent air, circulating, feed and bilge pumps together with the usual ballast, general service, other auxiliaries. Steam is supplied by two single ended Scotch boilers, with Howden's system of forced draft. The boilers are arranged in separate stokeholds, one port and one starboard, with independent uptakes and funnels, so arranged in order that the center of the deck may be clear for the three lines of car track.



Twin Screw Train Ferry Changkiang—Recipro cating Steam Engines—Coal Burning Boilers

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

A STEAMSHIP company which failed to provide a vestibule for protection from wind for a door opening upon the main deck and commonly used by the passengers, or to furnish automatic control to retard its motion in closing, was held, in the case of Osipuk v. Oceanic Steam Navigation Co., 58 F. (2d) 673, guilty of negligence when a passenger was injured by the door slamming on her fingers. The court further decided that noncompliance by the passenger, sixteen years of age, with a clause of the ticket limiting the time for notice of her claim for injuries was no bar to recovery, the evidence showing that passage had been reserved and paid for by the passenger's father, who was not shown the ticket nor warned of the provision, and that neither the injured passenger, nor her brother who was with her, could read English in which the ticket was printed, and that the type of the clause was small and obscured by some irrelevant handwriting.

* * *

VESSELS licensed for the coasting trade, with the provision that they shall not transport intoxicating liquor, are liable to seizure and condemnation if their licenses are violated, regardless of the national prohibition act, and the coast guard cutters have authority to operate on the high seas and on probable cause may stop and search American vessels to determine whether the revenue laws are being violated.—FIDELIA, 58 F.(2d) 744.

* * *

WHILE the tug is not an insurer or liable as a common carrier, it owes to the tow the duty to exercise such reasonable care and maritime skill as prudent navigators employ for the performance of similar service, and the burden is upon the tow to show that the loss for which recovery is sought was caused by a breach of that duty. The degree of caution required of the navigator of the tug in approaching the hazards of wind and sea must be measured with reference to the known character of the tow. It was therefore held, in the case of WYOMING, 58 F. (2d) 789, that a tug was not negligent in setting out with old wooden barges, though the tide was running strong, the season was November, and southwest wind and a crossing flood tide would result in a choppy sea, but, having noted the fall of the barometer and that the wind had not shifted from the southwest, the tug was negligent in going ahead into an increasingly rough and heavy sea.

* * *

A BOAT making contact with a vessel on the high seas and receiving prohibited liquors therefrom was held, in the case of WINNIE, 58 F. (2d) 653, to have proceeded on a foreign voyage without having given up her registry or license as a pleasure boat and engaged in trade, justifying forfeiture. "The proposition that the high seas are foreign territory or the territory of any one," said the court, "is rather staggering. We would prefer the fiction that a vessel is the territory of the nation to which the vessel belongs, and hence that when one vessel makes a 'landing' alongside of another she has touched the territory of the nation to which that vessel belongs."

* * *

THE custom on the lower Mississippi river that descending vessels should run the bends and take advantage of the current, and ascending vessels should come up under the points and get the benefit of slack water,is of such long standing that it has the force of law it was pointed out in the case of NORNE, 59 F. (2d) 145. The court also declared that a tug is not absolutely required to tow alongside in the Mississippi river, or even in the harbor of New Orleans.

* * *

WITHIN the maritime lien law, necessaries are furnished to a vessel only if and when they are actually delivered on board of, or at the side of, the vessel, or else delivered to its owner or his authorized agent for the purpose of, and followed by delivery to such vessel. A lien for the unpaid purchase price of supplies does not arise merely because the purchaser, who is the owner of the vessel, subsequently appropriates the supplies to her use, and the fact that necessaries are billed or charged to the vessel's owner does not deprive the person furnishing same of a maritime lien therefore. While such a lien may be waived by words or conduct indicating such an intention the mere acceptance of the promissory note of the vessel's owner does not, in itself, constitute or result in such waiver, unless shown to have been accepted with that intention, nor does the mere institution of an action in personam for recovery of the amount claimed affect a waiver, in the absence of other evidence of an intention to waive.—DENELFRED, 59 F. (2d) 213.

* * *

PURSE seine ordered for a fishing vessel is material and supplies, within the purview of the statute giving a maritime lien on the vessel, and shipping supplies by rail to the port of the vessel, sold for use upon the vessel and delivered and actually used, creates a lien.—PAUL L., 59. F. (2d) 223.

* * *

MASTER of a barge, who had left the boat to get his breakfast, and who was absent when the stern lines of the barge were thrown off with resulting injury to the barge and a motorship, was not guilty of negligence because of such absence.—EAST INDIAN, 58 F. (2d) 1015.

* * *

WHERE a passenger on a steamship requested a foot stool of the custodian of the cabin, to enable her to climb into her berth, the vessel assumed a responsibility for the adequacy of the stool supplied to meet the stated needs. A vessel must comply with a passenger's reasonable requests for a suitable device to afford convenient access to a berth, and if the cabin steward could not procure a stool the passenger sought for climbing into her berth, the steward should have relayed the request to his superior. If the cabin steward assumed to decide that the passenger did not require a lower stool than that in the cabin to climb into the berth, or that the article supplied was adequate, the vessel was liable for natural consequences.— DE GRASSE, 58 F. (2d) 1019.

* * *

WHERE the weather bureau posted storm warnings, the owner and crew of a scow moored alongside a steamer had the duty to take into account the weather conditions of which public warnings had been given. A crew failing to heed such warnings and take proper precautions was held liable, in the case of HAVRE MARU, 58 F. (2d) 999, for resulting collisions on the breaking of mooring lines.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	227	1,154,961	232	1,175,988
October	253	1,379,283	244	1,328,561
September	258	1,634,448	266	1,658,521
August	287	1,754,583	270	1,636,803
July	238	1,483,476	254	1,553,215
June	267	1,579,970	277	1,650,915
May	277	1,484,116	259	1,392,451
April	270	1,506,696	277	1,515,147
March	332	1,982,670	375	2,070,546
February, 1932	312	1,875,981	322	1,776,394

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	54	154,796	41	130,250
October	57	167,539	42	115,660
September	45	123,049	36	99,766
August	64	175,530	43	113,901
July	49	130,439	38	85,956
June	55	157,399	36	102,354
May	66	205,184	46	142,889
April	55	165,646	51	159,427
March	57	186,479	45	151,190
February, 1932	49	150,899	34	98,667

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	88	308,164	59	220,530
October	99	332,754	68	249.150
September	114	337,608	91	283,227
August	117	369,799	103	339,775
July	121	408,896	101	346,926
June	116	342,057	95	322,558
May	125	294,093	97	257,608
April	103	308,951	72	215,237
March	99	319,863	65	217,992
February, 1932	107	315,036	63	213,166

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	7	9,785	6	10,174
October	8	21,407	7	18,228
September	9	14,698	9	16,526
August	14	25,844	14	24,208
July	9	15,156	10	17,733
June	10	25,895	11	26,519
May	14	26,484	14	29,669
April	10	22,911	10	24,483
March	14	41,083	13	35,993
February, 1932	20	53,793	20	56,558

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	4	13,673	3	11,066
October	3	13.133	3	9.683
September	3	11,450	4	14,471
August	5	13,418	1	5,071
July	2	5,918	2	9,634
June	7	22,359	3	7,151
May	7	24,204	....	.....
April	4	17,438	3	13,515
March	8	35,293	5	24,289
February, 1932	5	19,442	4	18,533

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	19	78,628	41	157,544
October	25	98.792	45	182,167
September	25	98,370	37	146,945
August	22	93,256	32	127,572
July	21	84,961	24	99,035
June	20	80,272	25	98,356
May	20	82,750	25	99,862
April	23	83,171	28	104,796
March	26	103,924	36	142,050
February, 1932	32	127,810	36	149.417

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	80	254,047	83	262,796
October	98	281,907	94	281,534
September	66	190,459	80	241,287
August	88	243,077	87	245,091
July	88	255,354	86	255,209
June	95	299,502	97	294,264
May	95	289,042	102	317,751
April	108	346,276	114	377,317
March	96	288,052	105	319,511
February	105	337,487	98	323,603
January, 1932	95	301,958	102	328,876

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	20	54,678	35	79,516
October	15	60,775	36	80,792
September	26	74,483	53	118,437
August	25	53,025	37	86,952
July	23	72,755	36	91,332
June	18	51,803	48	114,222
May	24	52,049	43	112,672
April	22	59,932	33	77,515
March	33	79,948	42	99,939
February, 1932	22	68,136	48	121,647

Jacksonville

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	10	24,352	2	1,799
October	8	16,714	8	13,659
September	7	15,879	7	12,539
August	8	14,142	9	16,647
July	8	20,558	7	16,963
June	7	12,746	10	20,277
May	12	33,157	8	20,489
April	9	17,886	9	21,812
March	8	15,560	13	26,457
February, 1932	8	18,785	10	21,812

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	37	64,384	37	61,961
October	35	62.394	35	62,394
September	36	60,309	36	61,405
August	37	66,432	37	66,313
July	38	62,503	40	62,486
June	37	61,115	39	76,274
May	56	76,236	55	76,070
April	55	77,443	50	80,778
March	41	61,078	39	59,069
February, 1932	39	59,334	39	66,392

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	94	210,195	97	234,590
October	105	228,041	105	233,510
September	89	166,896	96	193,213
August	90	196,453	88	188,375
July	107	222,810	99	203,444
June	91	207,178	93	201,443
May	102	212,215	97	198,871
April	102	192,617	104	202,965
March	97	204,645	98	211,921
February, 1932	101	235,846	96	219,215

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	43	193,530	45	200,513
October	53	235,224	58	251,334
September	40	168,740	40	175,635
August	39	183,141	36	167,807
July	32	145,560	36	162,923
June	36	160,585	32	143,574
May	43	184,393	41	170,652
April	40	171,346	43	191,352
March	43	190,082	43	180,862
February, 1932	50	217,837	54	232,138

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No.	Net tonnage	—Clearances— No.	Net tonnage
November, 1932....	146	442,427	156	457,621
October	140	403,062	150	424,621
October, 1932	140	403,062	150	424,621
September	151	423,791	139	415,704
August	160	448,826	156	442,655
July	166	438,496	171	448,198
June	170	597,552	164	457,960
May	182	517,523	169	472,154
April	192	558,631	194	559,824
March	200	604,269	196	589,805
February, 1932	157	436,882	169	469,296

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	33	93,457	30	85,072
October	14	33,693	12	34,625
September	21	54,638	20	52,035
August	15	29,293	18	46,756
July	17	39,628	14	39,844
June	26	80,438	25	78,864
May	29	80,415	27	71,288
April	21	53,404	21	57,341
March	37	131,723	36	110,353
February, 1932	32	88,616	27	75,262

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	29	64,016	102	314,452
October	26	54.231	94	277,977
September	25	38,083	85	236,532
August	29	44,389	71	202,598
July	27	50,302	79	220,489
June	28	47,046	81	226,542
May	38	84,468	86	259,026
April	44	97,609	106	297,282
March	32	61,079	109	319,013
February	27	64,866	101	317,095
January, 1932	26	73,215	92	292,274

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	194	645,826	195	662,569
October	209	641,131	201	657,641
September	223	581,402	222	610,443
August	253	653,836	244	635,164
July	226	646,417	230	617,947
June	168	588,184	162	558,945
May	229	691,109	164	650,539
April	189	617,325	222	635,301
March	168	622,067	188	611,770
February, 1932	164	627,876	158	622,730

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	154	672,184	152	655,379
October	147	669 637	166	727,969
September	136	608,268	153	667,866
August	152	640,952	162	702,483
July	148	687,695	142	655,436
June	133	588,465	132	590,158
May	154	669,735	152	649,509
April	146	663,647	144	613,085
March	139	645,331	162	709,778
February, 1932	149	638,222	144	583,030

Houston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1932....	22	86,895	28	106,050
October	21	81 274	37	136,509
September	23	103,424	33	121,134
August	11	47.148	32	116,860
July	17	66,968	20	87,589
June	20	93,807	31	119,752
May	29	122,192	36	149,039
April	31	131,585	39	155,861
March	27	113,624	43	167,956
February, 1932	25	103,589	43	162,236

Note: The figures given in this table are for direct entrances and clearances. Additional vessels in foreign trade enter and clear from and to other American ports after original entry and before final departure. At the port of Philadelphia, for instance, additional vessels in the foreign trade in this category were 62 of 204,563 net tons entered and 50 of 167,338 net tons cleared for the month of October.

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

THE navy department on Dec. 14 received bids for a new 10,000 ton, 8-inch gun cruiser. The lowest bid, $8,196,000, was submitted by the Bethlehem Shipbuilding Corp. This bid was $1,329,000 under the next lowest bidder, and took the other bidders somewhat by surprise. Bethlehem's bid was $2,263,000 less than the contract for the sister cruiser TUSCALOOSA, awarded last year to the New York Shipbuilding Co., Camden, N. J.

The United Dry Docks Inc., Staten Island, N. Y., submitted a bid of $9,525,000; New York Shipbuilding Co., Camden, N. J., $9,616,000; and the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., $9,650,000.

The bids will be studied by a navy board and it is likely that the award of contract will be made by Jan. 1.

Te department of commerce reports that the construction of the drydock for San Juan, Puerto Rico is under consideration. The exact location of the proposed dock is not determined. Ships up to 600 feet in length are to be accommodated in the proposed plans for a graving dock.

Bids Received for Tender

On Nov. 29 bids were submitted by seven shipbuilding companies for building the new lighthouse tender HEMLOCK. Of these bidders four are located on the Pacific coast and three on the Atlantic coast. The HEMLOCK will be a twin screw, steam propelled vessel, with steel hull, 173 feet long, and engines of 1000 horsepower. She is to be used on the coast of Alaska to replace the tender FERN.

As specifications called for a delivered price at San Francisco and Seattle, and as two different types of boilers were offered, more than one bid was submitted by several of the bidders.

The following bids were received: Berg Shipbuilding Co., Seattle, $228,480; Pusey and Jones Co., of Wilmington, Del., $234,950, delivered at builders yard; Lake Washington Shipyards, Seattle, $283,000, delivery at Seattle; General Engineering & Dry Dock Co., Oakland, Calif., $319,664, delivered at San Francisco; Moore Dry Dock Co., Oakland, Calif., lowest bid, $269,998; Bath Iron Works, Bath, Me., lowest bid, $252,000, delivered at Bath; New York Shipbuilding Co., Camden, N. J., lowest bid, $285,000, delivered at Camden, N. J. As this is written, no information has been received as to award of contract.

Low Bid on Towboat

The Bath Iron Works Corp. Bath, Me., was low bidder on the construction of a new diesel towboat, 93 feet long, designed for the B. Turecamo Contracting Co., Brooklyn, N. Y. The bid was $98,500, delivery to be made in eight months and the vessel to be powered with one 750 horsepower Ingersoll-Rand diesel engine.

Offer Ships for Scrapping

On Dec. 14, the shipping board authorized advertisement for bids for the purchase of 40 vessels to be dismantled and scrapped. Proposals were sent out with form of contract to be executed in case of award; bids to be received by noon Dec. 28. Names of the vessels, respective deadweight tons and location is given. These vessels are in addition to the 124 ships which were recently sold for scrapping.

The contract for the 40 additional ships will provide among other things, that the first vessel shall be delivered and scrapping commenced on or before Jan. 15, 1933, and that the entire group of 40 vessels shall be scrapped within 13 months from that date, not less than three vessels or the equivalent thereof to be scrapped in each and every month. The vessels selected are not suitable for sale to private interests for operation, and owing to their age, the equipment and excessive cost of repairs, would not be placed in operation by the board.

Board Sells Oriole Lines

The shipping board on Dec. 14 accepted an offer, subject to the award of mail contract, made by the Southgate-Nelson Corp. for the purchase of the Oriole line at $5.90 per deadweight ton. At the present time the Southgate-Nelson Corp., is operating for the shipping board, the American Hampton Roads line, the Oriole lines, and the former Yankee line, as a consolidated service.

The price of $5.90 per deadweight ton "as is, where is," subject to the purchaser entering into a written contract to be approved by the board in form similar to agreements covering the previous sales of trade routes. Five of the ships selected are now operating in the service namely; steamships ARTIGAS, COELLEDA, COLD HARBOR, CLAIRTON and WINONA COUNTY. The remaining one to three ships will be selected at a later date. The Oriole Service is operating from North Atlantic ports to ports on the West coast of the United Kingdom and to Irish ports. The balance of the service takes care of East coast, United Kingdom ports, and Hamburg and Bremen, with certain exceptions from the North Atlantic ports.

It is reported that the Standard Oil Co. of New Jersey recently received a contract from the United States navy department for 235,000 barrels of bunker fuel oil for $194,820, and the Sinclair Refining Co. has received a contract for 40,000 barrels of bunker fuel oil for $38,100. These contracts are additional to those recently announced by the department and are for use of the service on the East coast from Jan. 1 to June 30, 1933.

Bids on Chain and Anchors

The McKay Co., McKees Rocks, Pa., has been recommended for the contract for 319 tons wrought iron open link, buoy chains, ¾ to 1⅝-inch iron for the lighthouse bureau, Staten Island, N. Y., on a bid of $21,126.62 delivered. Bids were opened Nov. 29. The following contracts have also been recommended to Washington: Woodhouse Chain Works, Trenton, N. J., 18 tons wrought iron, stud link chain, 1¼ to 1⅜-inch iron, $2654.83; Baldt Anchor & Chain Co., Chester, Pa., 63 tons, wrought steel buoy shackles, $6027.22; Penn Steel Castings Co., Chester, Pa., seven 5000-pound and three 7000-pound cast steel mushroom anchors, $2261.

It is reported that three new diesel feighters, the VOLGOLESS, DVINOLESS and KOMILESS, for lumber transport, were launched at Leningrad toward the end of last year. Each freighter has a tonnage of 5500.

Launch Coast Guard Cutter At Camden N. J.

In the December MARINE REVIEW mention was made of the launching of the United States coast guard patrol boat ARGO from the yard of the John H. Mathis Co., Camden, N. J., on Nov. 12. On Dec. 10 the GALATEA, sister boat of the ARGO, was launched from the same yard for the same owner.

These two vessels differ in external appearance from the seven previously built at the Bath Iron Works. They have two cylindrical stacks instead of one, the second stack being provided to accommodate the galley and heating boiler uptakes, and the exhaust from the generating sets which are equipped with vortex silencers and spark arrestors. Both vessels will be ready for service early in 1933.

The ARGO and GALATEA are 165 feet in length overall, 160 feet in length between perpendiculars; molded beam at waterline, 24 feet 1 inch and at main deck 25 feet, 3¾ inches; molded depth amidships, 13 feet 2½ inches; mean draft, fully loaded in salt water, 7 feet 6 inches; displacement fully loaded 332 tons. The bunker fuel capacity is 25 tons and the cruising radius, 4000 miles. The main propelling machinery consists of two Winton diesel engines developing a total of 1340 brake horsepower at 430 revolutions per minute.

Among the notable features of these vessels is the unique arrangement of the twin rudders and combine stern frames and shaft struts. A short stub shaft projects aft of the propeller, and is carried in a cutless rubber bearing fitted in a boss on the foreward side of the stern frame. In this way eddy losses due to the presence of the usual strut just foreward of the propeller have been eliminated. The rudders are streamlined to obtain minimum appendage resistance. The propeller shafts are also supported by intermediate struts located about midway between the propeller and after end of stern tube at the shell. These struts are also streamlined and are fitted with cutless rubber bearings supplied by the Goodrich Rubber Co. The stern tube bearings are babbitted and oil lubricated.

The steering gear in these vessels is of the latest type of Sperry Gyroscope Co.'s electric mechanical steerer. One 18-inch high intensity and two incandescent searchlights of Sperry make are mounted on top of the pilot house.

Each vessel is fitted with three 15 kilowatts Westinghouse, 120-volt, direct current generators, driven by Winton three cylinder diesel engines, provided with electric starting motors. A Kohler 5 kilowatts, gasoline engine generator set is arranged to cut in for electric service to standing and running lights and emergency radio, should current from the main generator sets fail. Lubricating and fuel oil are purified by two Hydroil centrifugal purifiers in addition to the usual filtering and straining.

U. S. Engineers Ask Bids

Bids were received on Dec. 14 by the United States engineer office, St. Louis, for the construction and delivery afloat of four 40 feet 6 inches x 9 feet x 4 feet 9 inches, steel hull, gasoline driven, propeller launches

Eleven bids were received ranging from $39,600 with Winton engines from the Berger Boat Co., Manitowoc, Wis., to $21,600 using Red Wing engines from the St. Louis Structural Steel Co., East St. Louis, Ill. Award of contract was not indicated.

Haiti Delivered to Owner

The new 10,000 ton liner HAITI, second vessel in a $5,000,000 shipbuilding program of two sisterships, (COLOMBIA) to be completed for the Colombian Steamship Co., arrived in New York on Dec. 19 from the Newport News Shipbuilding & Dry Dock Co. for delivery to the owner at Pier 9, North river. Elsewhere in this issue an illustrated article appears describing the COLOMBIA, first of these two sisterships. The new liner is in command of Capt. Lawrence Long, formerly commander of the line's steamer BOLIVAR.

The HAITI sailed from Pier 9, North river, New York on Dec. 22, 1932 on her maiden voyage.

New Cherbourg Terminal For Largest Ships

One of the largest marine and railroad terminals in the world is under construction at Cherbourg. The new structure to be 933 feet long and 140 feet wide, will cost $6,000,000. Ships of the French line now dock at Le Havre which has had better pier facilities for transatlantic liners than Cherbourg, where it has in the past been necessary to use lighters from ship to shore.

With the new terminal in operation, this will be entirely eliminated and Cherbourg will be able to accommodate even a super liner such as the recently launched NORMANDIE, 1027 feet in length.

The design of the terminal will be somewhat similar to those on the North river at New York. Passengers will enter the ship from the upper level of the pier and freight will be handled on the lower level.

Work on the Cunarder

Work on the giant new Cunarder is not to be resumed, or at least no action toward resumption of work was taken at a meeting of the board of directors of the Cunard Steamship Co., held in London, Dec. 14; notwithstanding the reports circulated that work will shortly be resumed.

One report had it that plans were under consideration for a change in the design to permit the installation of greater power than intended originally and that work would be resumed when these plans were completed. On the other hand, there is considerable opinion to the effect that the new vessel is too far along for any radical changes in design without heavy additional cost.

C. J. Pannill, executive vice president, Radiomarine Corp. of America, announced on Dec. 9, that the United States shipping board has renewed its radio service agreement by which RCA will supply radio service during 1933 to all shipping board vessels, of which there are at present 82 in service.

Bunker Prices

At New York

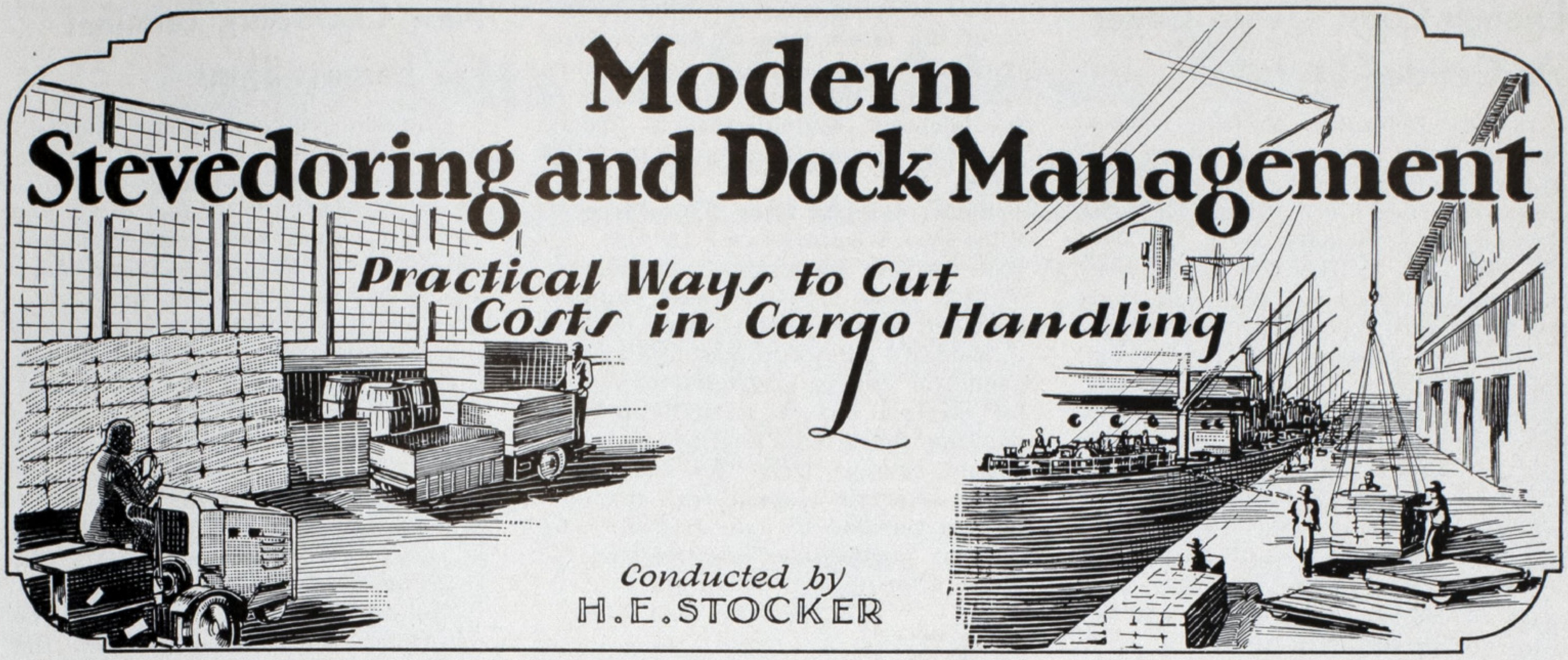
	Coal alongside per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Dec. 16, 1932	4.50@4.75	.80	4.75
Nov. 18,	4.50@4.75	.80	4.08
Oct. 18,	4.50@5.00	.80	4.08
Sept. 18,	4.50@5.00	.80	4.08
Aug. 18,	4 50@5.00	.90	4.08
July 18,	4.50@5.00	.90	4.04½
June 18,	4.50@5.00	.80	3.70
May 18,	4.50@5.00	.75	3.70
April 18,	4 50@5.00	.70	....
Mar. 18,	4.50@5.00	.65	3.25
Feb. 18	4.50@5.00	.65	3.25

At Philadelphia

	Coal trim in bunk per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Dec. 16, 1932	4.00@4.75	.80	4.04
Nov. 18,	4.00@4.75	.80	4 04
Oct. 18,	4.50@5.00	.80	4.04
Sept. 18,	4.50@5.00	.80	4.04
Aug. 18,	4.50@5.00	.90	4.04
July 18,	4.50@5.00	.90	4.08
June 18	4.50@5.00	.80	3.69
May 18,	4.50@5.00	.80	3.69
April 18,	4.50@5.00	.75	3.21
Mar. 18,	4.50@5.00	.65	3.21
Feb. 18	4.50@5.00	.75	3.45

Other Ports

Nov. 18, 1932	
Boston, coal, per ton	$7.11
Boston, oil, f. a. s., per barrel	$0.82
Hampton Roads, coal, per ton, f.o.b., piers	$4.00-4.25
Cardiff, coal, per ton	13s 9d
London, coal, per ton	—s —d
Antwerp, coal, per ton	17s 3d
Antwerp, Fuel oil, per ton	67s 6d
Antwerp, Diesel oil, per ton	82s 6d
British ports, Fuel oil	67s 6d
British ports, Diesel oil	82s 6d



Ship Officers and Good Cargo Handling

The Mate's Point of View

By Emmett Johnson Jr.

AROUND the piers, one often hears remarks about that which the mate could or should have done, such as separation, shoring, stowage of special articles and various other items.

Let us look at the human side of this problem—There seems to be much glamour connected with going to sea, especially so in the minds of those who do not have to go. The glamour of the places one goes, and the sights one sees, is probably the cause of embarking on a sea career. But at its best it lasts only a few years after which one gets tired of wandering around strange places alone.

This is especially so after a man has been at sea long enough to obtain papers, and to have been with a steamship company sufficiently long to have a mates berth.

Seldom Free from Duty

It is this man who has to be on board during discharging and loading, after a long sea passage.

There are three mates, and on the ordinary cargo boat, five hatches. One of these mates has to be on duty at night and altho not up and around, he is subject to call at any time. Generally speaking, the chief mate never stands a night watch in port, leaving this to the other two mates who feel that they should have a little shore liberty during the daytime.

They are at sea about 70 per cent of their time. If married, they see their families on an average of one weeks time during the entire year. It is true they are in port more than that, tho usually in some foresaken port rather than the home port. But time home, and free from the ship seldom comes, except when the mates are fortunate enough to catch a week-end in the home port. Even then they never have a morning that they do not have to be up and out of the house, earlier than most men. It is natural then that they should be thinking of home and wishing to get away as soon as loading or discharging for the day is completed.

Possibly it is something of local interest that draws him and his thoughts away. Ask some seaman—captain to messboy—what they think of the general topics of the day, elections, scandals of the tabloids, football, etc. Of these he knows very little, an occasional radio-news item, which disconnected as they are, is very little. They are unable to keep up with events.

Mates know ships, they know very little else. From time to time one of them goes to work ashore and then finds that he has to go back to sea again. He finds it too difficult to adjust himself to conditions ashore.

Along with a mind that longs for freedom, comes the work in port. In New York, the majority of the ships stores are received, also the larger percentage of general cargo, which needs the closest watching.

Stores for a ship, bound out on a three months voyage, will consist of about three good truck loads. Not all coming at once, but from time to time during the ship's stay in port.

The mate is handed a list, which is generally a cut down from the store list furnished by him to the office. The question is, what hasn't he got? Each item has to be checked by himself; paint, color and amount, brushes, size and shape; screws and hardware, for it is to be remembered, that once away from the pier, and for another three months, he is unable to telephone and have things sent down to the ship. Neither can he wait until next voyage, for the ship needs a certain amount of store before she returns.

Keeping Track of Stores

One source of trouble is the manner in which the office force orders repair parts and replacements. For example, one brass port dog—S. O. B. (See on board). The mate usually has these items listed by catalogue, name and number, instead of article by article.

When orders are placed in this manner, an old hat has to be dug out and shown the agents runner, who will probably wish to take it back to the store as sample. This has to be watched so that all are returned before the ship sails.

The average loading time, for New York, is a day and a half. If stores for the ship were delivered at one time, it would take about three hours to receive them. They are not delivered at one time, and often arrive

at the last moment. I have seen the gangway lowered again to take on fire hose, which at times is an important item to say the least.

Then the crew—various men coming and going. Especially so the last day, when the doctor is examining them. He will require the mate for information on this man and that man. When signing on, the mates services are again required; if not for the actual work itself, the master wants him there to see the men he is signing on.

Then come his duties with respect to cargo. He is of course consulted as to the general lay-out of cargo, and especially when there is anything that might happen to the cargo for which the stevedore does not care to be responsible. But a hatch will be working one commodity and the first thing he knows, another will be in the slings, and usually in the hold, before he knows anything about it. He is assured by the stevedore foreman that everything is all right, and the cargo will be stowed properly. The mate probably goes down himself and sees a part of the cargo stowed, but has to leave for some reason, before the work is finished. While gone the goods many times are wrongly stowed; a bit of separation paper or dunnage is left out here or there; a case shoved in the rear and forgotten, to be discovered at a port far from its destination.

Wrong Stowage Dangerous

I have seen two sixteen ton iron cases checked off with lightly pressed bales of rags. The mate complained of this stowage, but was overruled by the stevedore, who was supported by the pier superintendent. The case broke adrift at sea and blame fell on the mate.

In being in and around various piers, one often hears what the mate should do to facilitate loading and stowage of cargo. Especially with reference to damage and the claims that arise from it. Not the large claims from sea damage, etc., etc., but the smaller cases of broken, crushed and otherwise damaged cases.

Under present conditions, just how much has the mate to do with loading cargo? He is consulted as to the general stowage, and particularly with reference to cargo which might damage other cargo, the stowage of which the stevedore does not care to assume the responsibility for.

A particular compartment is laid out for general cargo, this is at New York and in the preceding port of Baltimore or Philadelphia, structural steel has been stowed two feet high in the 'tween deck. The general cargo is stowed on top of this.

It is understood that a good layer of dunnage is to be laid on top of the steel. The stevedore assures the mate that this will be done, and it is started so. Then the mate has to leave that hatch for another duty, leaving the third mate in charge of that end of the ship. Now the longshoremen are stowing that sort of cargo in a different ship each week, and have been doing so for the past five years or so, whereas, the third mate is loading a cargo on an average of once in six weeks. The chances are that the third mate has not been at sea longer than three years. Of course he has been taught seamanship, navigation rules of the road, etc., etc., but usually has not had much training with respect to cargo.

Learning About Cargo

I knew of a very bright third mate who had been at sea for some two years, as third mate in intercoastal service, and yet he did not know that all linoleum should be stowed on end, and on end only. He had graduated from a recognized nautical school. It is often the case that learning about cargo is left for him to pick up from time to time on ship, while serving in the capacity of a supervisor of cargo stowage. An expensive method of teaching simple cargo handling facts.

I have seen reels of cable checked off with bags of flour, and have heard the junior mate raising "cain" about it, and have seen him stood down that it was all right, only to find afterwards that he had to go below with a gang of sailors while at sea and secure this same cargo.

I have given you some of the duties and troubles of a mate. Let me quote a little poetry which pretty well outlines some of his other duties—

The Fall Guy

If the ship begins to roll, call the mate.
If the cook runs out of coal, call the mate.
If the old man goes to bed, if you see a squall ahead,
If you need a sounding lead, call the mate.
If the running lights go out, call the mate.
If your latitude's in doubt, call the mate.
If the wind begins to howl, if the sailors begin to growl,
If the whistle string gets foul, call the mate.
If you're coming into port, call the mate.
If the midnight lunch runs short, call the mate.
If the cargo starts to shift, if the work boat goes adrift,
If the fog begins to lift, call the mate.
If you want to drop the hook, call the mate.
If you're looking for the cook, call the mate.
If you run a light abeam, if the chief can't give you steam,
If the messboy has no cream, call the mate.
If you need the crew on deck, call the mate.
If the gangplank is a wreck, call the mate.
If the old man's on a blink, if a draft falls in the drink,
If you haven't time to think, call the mate.
Yes, that's who the fall guy is, its the mate.
All the petty griefs are his, damn the mate.
And, at that, the poor old bird never gets a pleasant word,
Thank the Lord I'm just the third and not the mate.

And now the second mate. He also has a few stores to look after, navigational equipment, including charts and their corrections from the notices to mariners, which will take some time even for the ones near at hand, that he will have to have up-to-date before leaving port; weather reports and barometer comparisons, and gyro compass. New York is where the Sperry men come down to the ship.

Special cargo is another important item that is usually left to the second mate. This requires that he be in the locker continually during its loading.

Now, this leaves the third mate free—with only four hatches (the second being in No. 4 with the special) while the above poetry indicates that the "Third Mate" has very little to do—he has some duties. The captain very often requires his services for paper work, crew lists, cargo logs, if he is a typist, he is called upon to write letters.

Taking Responsibility Seriously

There are a few other duties that come up from time to time for the mates, all of which happen during the time cargo is being loaded. The ship is loaded by men, who, although they have the company's interest at heart, nevertheless are not the ones who are going to sea with the ship, nor are they going to be along when the cargo is being discharged. Although the responsibility will come back to them in time, more often than not, the little discrepancies in stowage, are overlooked, such as when all hands have to get below and hunt for a package that has fallen behind the next ports cargo. There are other small damages that, though they are not large enough to constitute a claim, do reflect on the mates work, at the discharging port.

For the most part, deck officers of American and foreign ships feel their responsibility strongly. More often, one finds that the longshoreman have the feeling of not caring, rather than the mates. Once the ship has sailed, the stevedore has a feeling that his work is finished, which certainly should not be the case.

The greatest need is for proper support from shore. There should always be some one to whom the ship's officer can appeal in a fight with the stevedore and get a sound, fair and prompt decision. As has been stated in this section, a good organization will save the company and save the mates a great lot of unnecessary wear and tear.

How to Minimize Sweating By Ventilation Control

By A. W. Young

RECENTLY considerable emphasis has been given to the installation of ventilating systems in new ships. It is also reported that some older steamers have had mechanical ventilating systems installed.

All the installations which have come to the writer's attention are of the blower type wherein atmospheric air is either forced into or drawn out of the hold, without regard to humidity or the difference between cargo and atmospheric temperature. If all the moisture were extracted from the air before being forced into the cargo hold there would not be any chance of moisture being precipitated on any cooler cargo or ship's skin, but so far this has not been successfully done.

On steamers carrying holds full of canned goods, iron products (especially galvanized iron sheets) or any commodity which is liable to be damaged by the precipitation of moisture on its surface, the question of ventilation is of vital importance.

Some time ago the writer suggested a plan for minimizing ship's sweat and since then it has been proven that rust and sweat damage can be definitely diminished by following this procedure. The only actual experimentation known in this field was performed by S. J. Duly, of the City of London College.

How to Minimize Sweat

In theory to minimize sweat, which is set forth herewith, and which applies fundamentally to metal cargoes, ventilating at all times is considered a fallacy and the following rule should be put into effect:

"Restrict ventilation in a rising temperature and permit ventilation in a falling temperature."

It is not claimed that this theory will prevent all rust, as possibly moisture may have already been deposited on the cargo during its journey to the steamer, but it is believed that this practice will minimize sweat in the ship's hold which after all is the most serious.

"Humid" means containing sensible moisture—damp. All the atmosphere along the seaboards of the United States hold in suspension a certain amount of humidity. This humidity can be precipitated onto an object which is colder than the atmosphere. A glass of ice water soon collects beads of moisture on the outside of the glass when standing in a room, due to the fact that the humidity in the atmosphere is precipitated by its contact with a colder object. If the ice water is allowed to stand until it reaches the room temperature, the surface moisture is evaporated and no further action takes place. A glass of warm water does not cause any dew to form on its surface. To prevent condensation on a cold object it is necessary to either have the atmospheric temperature approximate the object or else restrict the volume of air which comes in contact with its surface.

A consignment of canned goods is loaded in the United States aboard a steamer bound for the opposite United States coast. The vessel immediately puts out to sea, heading for the Panama canal. During the winter season, the ship soon encounters a severe rise in temperature, both atmospheric and sea water. This is also true to a minor extent during the summer months as well.

A Cargo of Canned Goods

Let us consider a cargo of canned goods. The temperature of the cargo, when loaded, was at least that of the loading port. Canned goods in warming or cooling do not keep in step with the warming or cooling medium. There is a lag, dependent upon the weight of the object and its specific heat. In a steamer hold full of canned goods during a rise in temperature, the difference in temperature of the atmosphere and hold is appreciable and real. Here is the crux of the matter. As the cold glass will collect moisture from the warmer atmosphere, so will the cool cargo collect moisture from warmer climate. Therefore, to prevent this condition, shut off all possible air from coming in contact with the cargo. In other words, with a rising temperature (in this case steaming from the north to the south) shut off all possible ventilation. The larger the shipment the less ventilation should be afforded, as the temperature change of cargo is slower.

The contrary is likewise true. The cargo has now reached the Canal Zone and is probably close to atmospheric temperature. When it is observed that the hold temperature approaches atmospheric, ventilation should be started. As the steamer proceeds northward, vigorous ventilation must be employed as in this case the hold is warmer than the atmosphere and the humidity would increase causing moisture to be deposited on the skin and top of the hold and setting up a condition ideal for the growth of fungus on labels or linen binders of fiber cases.

In other words, with restricted ventilation during a fall in external temperature, the humidity in the hold's atmosphere will be deposited on the steel sides of the hold which are now the coolest part. If enough moisture is collected on the underside of the deck, it will drip onto the top layer of cases causing some damage. This is analogous to an automobile standing outside during a drop in temperature with all its windows closed. The windows "steam up," caused by the humidity inside being condensed on the cold surface exposed to the outside.

It is also a fact that nights in the tropics are sometimes comparatively cool. A steel deck being a good heat conductor will cool rapidly with the result as above, moisture may drip on the top tier of cases. To minimize this condition, ventilate vigorously during any appreciable drop in temperature during a tropical night. However, the most serious damage is encountered when the entire shipment sweats with its resultant rust.

All metal shipments should go in the same hold when possible, and the popular belief of ventilating at all times should be discarded. The rule to follow is:

"Restrict ventilation in a rising temperature and permit ventilation in a falling temperature."

The author, A. W. Young, is marine adjuster, San Francisco office, Firemen's Fund Insurance Co.

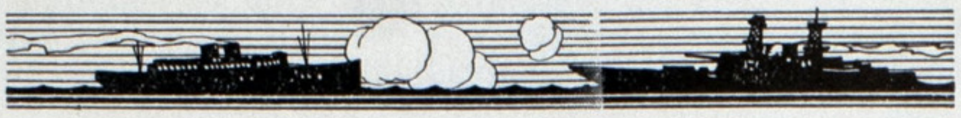
Mail Pay for High Speed

The shipping board is recommending to congress that the rate of mail pay for American flag liners at speeds in excess of 24 knots be increased in an amount sufficient to make possible the operation of high speed liners in the competitive transatlantic trade.

If congress complies with the board's recommendation amending the Jones-White act to provide adequate mail pay for high speed liners, the United States lines would undoubtedly seriously consider going ahead with the project for building two fast superliners for the transatlantic trade.

To meet competition, it is believed that a speed of 30 knots or more will be necessary. The United States cannot hope to obtain first rank among maritime nations without ships comparable to those already placed in service by the German and Italian lines and the NORMANDIE to be placed in service by the French early in 1934. The building of two American superliners, supported by adequate mail pay, would not only place the United States in a first class competitive position in the transatlantic service but would also provide much needed work in shipbuilding.

Useful Hints on Cargo Handling



IRON, steel and other metals should be stowed away in such a way as to bring the weight of the cargo as high up in the ship as necessary, so as not to make the ship unduly stiff. About one-third of the weight of the shipment should be placed in the 'tween decks. If the ship has no 'tween decks, the cargo should be built up either by the use of planks laid between different tiers, or by stowing grate bar fashion, that is, with one tier fore and aft, on top of the ceiling, the next rails diagonally with rails fore and aft on each side to guard the ship's sides, continuing stowage in this manner until the desired height has been reached. The upper tiers should be laid fore and aft and the uppermost locked, that is, to insert the upper rail to fill in between the underlying tier in order to get a flat solid top. If no other cargo is to be stowed on top of shipments of iron, they must be securely shored down against 'tween deck, or the main deck beams in hatch corners.

If the length of the pieces in the cargo is such that it cannot be stowed in that way, it should be brought up pyramidically from the ends of the ship, and stowed in such a way that one tier binds the next one. When dunnaging for iron in ships, where there is no ceiling, the dunnage must be laid either athwartships on every second bottom span or planks can be laid diagonally so as to rest on several spans. If this is not done, the tanktop may be dented and may become leaky. Cargoes of steel, tin and other metals, must not be stowed on top of barrel goods, general cargo or cargo that is liable to damage on account of the weight of such shipments.

Duty of Ship's Officers

IN THIS issue, the ship's mate presents his point of view of the difficulties of the deck officer in connection with cargo handling and stowing. Anyone familiar with operations realizes the practical force of the statements made in his article.

Nevertheless, good ship operation, as for all other activities in life, depends for its ultimate efficiency on the experience, intelligence, energy and conscientiousness of all individuals participating. It is necessary for every ship's officer to demonstrate under difficult conditions all of these qualifications if he is to do his job in the right way. He must remember, and all others must, that the road to success is not one of convenience and ease. The story goes that when one of Napoleon's marshals reported a victorious engagement, the little corporal wanted to know what he had done after the victory. This may seem thankless, but efficiency is a stern taskmaster, and insists on following through until the job is successfully completed.

The ship's officer, like any other individual, should first look to his own shortcomings. When he has mastered these, he can and should insist on maximum co-operation on the part of all others affecting the success or failure of the work in hand. It might well be worthwhile for the shore officials of steamship companies to see to it that all officers on their ships be given the best possible training in their duties in connection with cargo handling and stowage. Further, shore officials should give serious hearing to all just complaints from deck officers as to the manner in which cargo is being handled and stowed on their ships to the end that the operation be improved.

THIS page is being devoted to short items on all matters having to do with the more efficient turn-around of ships. These items are intended to be of a helpful nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

Proper Hull Lighting

ONE of the suggested minimum safety standards submitted by the Pacific coast marine safety code committee refers to proper lighting of ships in connection with cargo handling.

Where longshoremen are required to work or travel, lighting of ships shall not be less than the following minimum standard. In addition to the required intensity of illumination, injurious glare should be avoided.

1. Cargo handling machinery in use on deck spaces where work is being done shall have a minimum intensity of illumination of 2 foot candles.

2. Cargo holds, 'tween decks, tanks and compartments, where longshoremen are required to work, shall have a minimum intensity of illumination of 2 foot candles, provided, that when the loading is to 'tween decks through side ports, the minimum should be 3 foot candles.

3. All gear aloft, while in use, shall be illuminated with a minimum intensity of ½ foot candle.

4. All places where employes are required to travel, but work is not required to be done, shall be illuminated by a minimum of ½ foot candle.

Note: Unit of light intensity in foot candles means that produced at a point on a surface one-foot distant from the light source of one candle power, the surface being at right angles to the light rays.

For permanent lighting fixtures, 100-watt, frosted globe lamps are recommended as the least intensity desirable. For portable lights, a single 300-watt, white globe lamp in a symmetrical angle type of reflector is recommended.

After Jan. 1, 1934, the minimum standards for illumination of decks, holds and cargo handling gear aloft should be the equivalent of those adopted by the Pacific coast marine safety code for new ship construction.

Ropes, Slings, Pendants

THE American marine standards committee in its compilation for standards for platform slings for cargo handling also gives the following information on ropes, slings or pendants:

The slings or pendants may be made either of wire or manila rope, the choice of which depends upon the service which the platform is to render and the character of the cargo to be handled. They are generally made of wire rope if they are not subject to kinks, especially if they are detachable from the platform as part of the hoisting gear. Manila rope is preferable where the slings are to be permanently attached to each platform; also where the ropes are to press on the load without protected shields.

Wire rope for pendants may be of any one of the four steel grades defined in standard specifications, or of other equally suitable higher grade metal, which may be specified or accepted by the purchaser.

Manila rope slings or pendants shall be of three strand medium lay or equivalent rope of pure manila fiber of standard marine or stevedore grade or better and not less than 4 inches in circumference.

Lake Carriers Opposed to St. Lawrence Waterway

AT THE conference held by the National Transportation committee in New York, Dec. 7, the Lake Carriers association, a body representing American vessel owners on the Great Lakes, presented a memorandum stating its views in opposition to the building of the St. Lawrence waterway as contemplated in the treaty now before the United States senate for confirmation.

The memorandum, prepared by L. C. Sabin, vice president of the Lake Carriers association, presents in considerable detail reasons for the stand taken by the association. The section of this report devoted to the financial returns is quoted below, in part, as follows:

Financial Returns Indicated

"If the freight movement, over a new route and by new instrumentalities, should take place as indicated, the effect in a financial way, on government and industries of the United States, may now be outlined as follows:

Gains to the United States

3,000,000 tons of United States grain exported to countries other than Great Britain at a possible saving of 3 cents per bushel	$ 3,000,000
(This saving is said to go to the producer but being practically debarred from the Liverpool market this is very doubtful.)	
1,000,000 tons of petroleum products at estimated saving of 50 cents per ton..	500,000
3,000,000 tons of miscellaneous freight at estimated saving over present routes of $1.50 per ton	4,500,000
1,000,000 horsepower of electricity energy possibly saleable at $5.00 h.p.	5,000,000
Total possible gain	$13,000,000

Loss to the United States

Carrying charges on St. Lawrence investment, operation and maintenance	$17,000,000
Carrying charges, channels, wharves and inner harbors borne by dock interests	1,000,000
Loss of traffic to American railroads, the Barge canal and the Great Lakes fleet, 5,000,000 tons United States grain diverted to Montreal at average estimated loss in gross revenue $2.20 per ton..	11,000,000
6,000,000 tons coal loss of export to Canada affecting mines, lake and rail carriers, at $3.00 per ton gross revenue	18,000,000
1,000,000 tons ore loss of export to Canada, affecting mines and carriers, @ $3.00 per gross revenue	3,000,000
Total loss	$50,000,000
Less gain	13,000,000
Net loss per annum	**$37,000,000**

We are not claiming that the above is an accurate showing of the entire effect of the waterway, but we are endeavoring to point out the sort of difficulties and degree of losses likely to result.

It is of course true that a part of the items listed under losses do not represent actual out of pocket expenditures, but they do represent a measure of the loss of labor to miners, railroad operatives and sailors.

Probably the most substantial benefit to be derived from the proposed waterway is the saving of perhaps 3 cents per bushel on export grain. To the extent to which this saving would accrue to the American farmer it is a most desirable feature.

Although theoretically correct, the idea that the producer secures the greater part of the benefit of reduced transport cost has not always proved true in the past. However, it would be far cheaper to give a direct subsidy to export grain rather than indulge in this plan with its far reaching adverse results to industry and commerce.

Proponents of the plan are wont to claim that this saving per bushel will be reflected in the entire volume produced. When it is recalled that less than 3 per cent of the wheat grown in the states tributary to the Great Lakes is exported, it requires both imagination and credulity to admit such a thesis.

Some of the objections of the Lake Carriers association to the St. Lawrence development, which were touched upon in the memorandum presented, were summarized in that memorandum as follows:

Conclusions on Waterway

1. Present transportation facilities on the lakes are adequate to serve the traffic with expedition, efficiency and economy.

2. Traffic that might develop on the waterway would transfer to foreign ships and foreign ports the commodities now handled by facilities of the United States.

3. Studies made by the proponents, giving estimates of the amount of traffic that might use the waterway and the resulting savings, are inaccurate as to the quantity and kind of commodities likely to move, and give an entirely unreliable impression as to resulting savings in transport.

4. The entry of foreign ships to the Great Lakes trade would injure the American merchant marine and would subject our sailors to the competition of foreign seamen with a much lower wage scale.

5. The loss of export of coal and iron ore would injure our miners and the operatives of railroads serving the lake territory, as well as our ports through which such traffic now moves.

6. The proposed improvement would result in a further subsidy to Canadian grain and British coal and in the present situation it is not clear that American interests would be justified in contributing to either.

7. The cost of the project to the United States is considered out of proportion to any benefits that might accrue to agricultural or industrial interests in the United States. If the waterway were to be used to any considerable extent it would involve heavy expense on municipal and private interests to provide for the receipt and shipment of freight by means foreign to the present type of vessel for which the terminal facilities have been built, thus adding to the carrying charges attaching to the project as a whole.

8. Finally it is submitted that no present need exists for this deeper connection between the lakes and the sea; that if used it would disrupt present adequate and efficient means of transportation; that it would subject Great Lakes sailors to the competition of cheap foreign labor and that it would work to the serious disadvantage of our merchant marine and our export trade.

In conclusion it is the hope of the Lake Carriers' association that before formulating any opinion or report upon the proposed scheme your committee will have made a complete and thorough investigation of its probable effect on this country, its industries and its merchant marine."

In 1925 the Soviet commercial seagoing vessels, aggregated 257,800 tons in 200 units. In 1927 this tonnage decreased to 212,624 tons as a number of older vessels had to be discarded. Since that year, shipbuilding has steadily developed and at the beginning of 1932, the Soviet merchant fleet included 300 vessels with a total tonnage of 607,596. During the first half of 1932, 15 vessels with a total tonnage of 57,260 were added. It is estimated that towards the end of 1932, the total tonnage of the Russian merchant fleet reached 700,000.

Up and Down the Great Lakes

Lake Bulk Traffic—Season Ends Early—Business Dull —Lake Levels—Ocean to Lakes Traffic Increases

DURING the month of November, the total American lake movement in Lake Superior iron ore totaled 250,310 tons, compared with 420,594 tons for the month of November, 1931. Up to December 1 this year the total movement of iron was 3,567,985 tons, compared with 23,467,786 tons for the season of 1931 up to December 1.

Total traffic through the Canadian and United States locks of the Sault Ste. Marie canals for November this year amounted to 2,877,468 tons, as against 3,048,615 tons during the month of November, 1931. Flour, wheat, other grains, iron ore and anthracite coal, all showed decreases from last year's record. Iron ore was only slightly over one-half of the November, 1931, tonnage and one-tenth of the November, 1930, tonnage. Since the opening of navigation this year, 20,266,213 tons of freight have passed through the locks, as against 44,321,953 tons for the year 1931 up to December 1.

For the sixth consecutive month the Welland ship canal has shown an increase in the transit of freight as compared with 1931 records. Corn increased from 23,912 tons to 102,777 tons. The amount of increases in other commodities are as follows: Wheat, 35,019 tons; merchandise, 53,921 tons; coke, 27,318 tons; gasoline, 26,920 tons; iron and steel, 12,568 tons; paper, 10,505 tons. Smaller increases in other commodities more than offset decreases in barley, oats, coal and sand. The total tonnage for November, 1932, was 1,086,562 tons, which was an increase over November, 1931, of 131,789 tons. The total traffic from the opening of navigation to Nov. 30, 1932, was 8,388,916 tons, showing an increase of 1,218,984 tons over the 1931 traffic, and is a new high record, exceeding the record for the whole season of 1928 by 949,299 tons.

Total traffic using the St. Lawrence canals during November amounted to 751,220 tons, which was an increase over November, 1931, traffic of 87,584 tons. The large increases included 53,400 tons of corn, 38,087 tons of gasoline, 41,337 tons of merchandise, and 14,993 tons of anthracite coal. Total traffic for the season to Dec. 1, amounted to 6,642,584 tons, as compared with 6,005,224 tons in 1931.

Severe weather and lack of business caused the practical closing of the navigation season on the Great Lakes on Dec. 11.

Since there can be no universal order to shut down navigation at any specific time, a few scattered ships continued the completion of voyages. Insurance, of course, plays an important factor even when weather conditions and business make it attractive to continue operation. As a general thing, Dec. 15 is officially the end of the season.

November Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of November as follows:

Lakes	Feet above mean sea level
Superior	602.50
Michigan-Huron	577.94
St. Clair	573.54
Erie	570.57
Ontario	244.38

Lake Superior was 0.11 foot lower than in October (since 1860 the November level has averaged 0.16 foot lower than October), and it was 0.09 foot higher than the November stage of a year ago.

Lakes Michigan-Huron were 0.16 foot lower than in October and were 0.40 foot lower than the November stage of a year ago.

Lake Erie was 0.08 foot lower than in October, and it was 0.14 foot lower than the November stage of a year ago.

Lake Ontario was 0.19 foot lower than in October and it was 0.38 foot higher than the November stage of a year ago, 0.70 foot below the average stage of November of the last ten years.

James A. Paisley Dies

James A. Paisley, one of the largest independent vessel operators on the Great Lakes, died Nov. 30. He had a remarkable career. Born in Newcastle, Pa., Sept. 30, 1866, he started his working career as a brakeman on the Pennsylvania railroad out of Ashtabula, O. From this position he was advanced gradually to night yardmaster at Ashtabula. During the day he occupied himself taking coal orders and later became an owner of a retail coal yard, which is still doing business.

He then branched out into the wholesale coal business, and finally, in 1907, transferred his activities to Cleveland where he incorporated the Valley Camp Coal Co. His interest in shipping began at this time through a connection with James Playfair of Midland, Ont. In 1909 he shipped his first cargo of coal from Cleveland to Fort William, Ont. In this connection it is interesting to note that it required six days to unload this first coal cargo, as compared to the six hours it now takes.

The Valley Camp Coal Co., of which Mr. Paisley was president at the time of his death, is now the owner of a fleet of 15 ships. This company is also the parent company for 23 subsidiaries including enterprises in mining, vessel and dock operation.

Mr. Paisley was an unusually hard worker and his interests were mainly devoted to his widespread and numerous business activities. The story goes that for the last 15 years he averaged 75,000 miles of traveling in connection with the management of his affairs.

Ocean to Lakes Traffic

Though the past season has been one of the lowest in traffic on the Great Lakes for many years, certain activities have shown an increase particularly the number of ocean vessels coming to the Great Lakes.

It is reported there has been a very definite increase in the number of foreign ships bringing cargo to the Great Lakes. Something like 150 ocean vessels passed through Montreal during the past season of navigation bound to the Great Lakes with cargo. About half of these were of foreign register, bringing freight transatlantic for ports in Canada and United States on the Great Lakes. The major part of this cargo, it is reported, consisted of wood pulp from Scandinavian countries.

Capt. Frank J. McCarty, assistant inspector of hulls in the United States steamboat inspection service, Cleveland, died on Dec. 1, at the age of 46.

He was born at Mackinac Island, Sept. 18, 1886. His seafaring experience began on vessels trading to Mackinac Island. He became master of vessels in the Arnold line, trading between Mackinaw and Sault Ste. Marie.

Before the end of the war and shortly after, he was stationed at Montreal to aid in expediting the passage of new ships built on the lakes through the canals to the sea.

Reviews of Late Books

The Stability of Ships, by George Johnson, B.Sc.; cloth, 56 pages, 8½ x 5½ inches, 16 plates and tables, published by the Journal of Commerce and Shipping Telegraph; printed by Charles Birchall Ltd., Liverpool; supplied by MARINE REVIEW, (cost on application) and in Europe by the Penton Publishing Co., Caxton House, London.

This valuable book has been brought out by the Royal Society for the Encouragement of Arts, Manufactures and Commerce under the Thomas Gray Memorial trust. This little book on stability is directed to anyone interested in the subject but particularly to ship officers who should know about the stability of their particular ships.

An attempt is made to review the information necessary for a ship officer to obtain an exact working knowledge of the stability of his ship. The supply of this information involves and implies a certain amount of work —less perhaps, to the officer than to the shipbuilder—and it will rest with the officer to decide how far he is capable of using it. His attitude will determine how much of it the owner will request from the builder. The language of high mathematics has been avoided in this treatise as much as possible.

We consider this book an especially useful, clear and simple exposition of the stability of ships and it deserves a place in the library of everyone in any way interested in this subject.

Tunnard's Tanker Tables, A Handbook on Petroleum Metrology, by B. Tunnard, cloth, 78 pages, 8½ x 5½ inches; of these 78 pages, 38 are devoted to Tunnard's tanker tables; published by Brown, Son & Ferguson Ltd., The National Press, Glasgow, supplied by MARINE REVIEW for 7 s. 6 d. plus 15 cents postage and in Europe by the Penton Publishing Co., Caxton House, London.

This is the second edition and the author points out that with the extending use of petroleum and its products, some consideration should be given to a correct method of converting volumes to weights and vice versa. When it is remembered that modern tank steamers carry cargoes amounting to millions of gallons—to say nothing of the huge quantities stored in installations ashore, the possible error arising from discrepancies in the values of weights and volumes assumes considerable proportions.

To render these tables more applicable to an international use they have been extended to cover the metric system and conversion factors at both 60 degrees Fahr. and 62 degrees Fahr. have been added to overcome the difficulty arising in the use of these temperatures in petroleum metrology.

Know Your Own Ship, by Thomas Walton, cloth, 446 pages, 7½ x 5 inches; published by J. B. Lippincott Co., Philadelphia, and supplied by MARINE REVIEW, for $5 plus 15 cents postage; and in Europe by the Penton Publishing Co., Caxton House, London.

This is the twenty-sixth edition of this valuable work, thoroughly revised throughout by John King. It contains simple explanations of stability, trim, construction, tonnage and freeboard of ships, together with a fully worked out set of the usual ship calculations (from drawings). This book has been especially arranged for the use of ship's officers, superintendents, engineers, draftsmen, and others.

The chapters concerned with the design, construction and strength of ships have been re-written in view of advances in shipbuilding and the parts relating to stability and rolling have been so recast as to render the principles and their practical application in the management of ships easily understood. Some of the important aspects of the international conventions affecting ship design and the merchant marine are also considered in this book.

Another important feature for both deck and engineer officers is the manner in which test questions for examinations have been modernized and extended. This book is worthwhile for beginners as well as for those more experienced in the design, building and operation of ships.

Man-Hour Electrical Estimating Manual, by Theodore Heinzerling, cloth, 384 pages, 8 x 11 inches; published by Rurick Press Inc., New York; supplied by MARINE REVIEW for $10 plus 15 cents postage and in Europe by the Penton Publishing Co., Caxton House, London.

This book of labor data is intended as a direct aid in making and checking estimates for all types of electrical installation. For the shipyard it is particularly valuable for estimating the cost of proposed electrical installations, and for the planning of all such installations.

The book is divided into the following three sections: Introduction—in which are given detailed directions for preparing electrical estimating, and directions for finding and using the data in the book; man-hour charts—a comprehensive collection of labor data taken from the cost records of thousands of buildings, giving the man-hours required to install 71 different types of electrical equipment in every type of domestic, commercial and industrial buildings; the third section is devoted to convenience wiring charts, including six wiring charts containing much valuable engineering data.

The Charming Sally, a novel by Maud Hart Lovelace, pages 311, 7½ x 5 inches, published by John Day Co., New York.

It is unusual to review a novel in these pages and the reason in this case is the interesting historical research of the author in her description of the sailing vessel, CHARMING SALLY, and shipping customs, including passenger travel, in the middle of the eighteenth century.

It is a matter of historical record that a traveling company of actors, about which the action of the novel revolves, arrived in Virginia in 1752 on board a sailing vessel named CHARMING SALLY, Capt. Lee, master The kind of ships in those days were, sloops, brigs, schooners and snows. The CHARMING SALLY was a snow.

It is interesting to note, that while nautical terms in the eighteenth century were so much what they are today, life on a vessel then and now should be so completely different. Accommodations then were crude to an unbelievable degree. The cabin could be appropriated by one group of persons and the remainder of the passengers fared as best they could. The cabin was far from luxurious, a good sized wave could sweep in and put out the fire in the cabin stove around which everyone hovered.

The ship's food was not adequate and wise travelers brought their own supplies. They even provided their own wines. Of course, a cow, pigs and chickens were carried on every voyage, and passengers could have new-laid eggs for breakfast, but they grew so much attached to their livestock during a long voyage that they hated to secure their Sunday roast of pork. Clever tourists used to plant turnips and thereby get greens for salads to help out the mould biscuits which seem to have been their staple food.

Index to Transactions, of the Society of Naval Architects and Marine Engineers, Volume 1, 1932, cloth, 135 pages, 9 x 6 inches; published by The Society of Naval Architects and Marine Engineers, New York.

This first volume of the index covers the papers presented in volumes 1 to 38 of the transactions of the society for the years 1893 to 1930. A vast store of valuable information is contained in these transactions contributed by leading authorities in the field. They constitute an encyclopedia of great value for reference. They include extensive researches, analyses of various problems and organized data which are frequently referred to.

This index makes this information available for practical use and study. All subject matter of sufficient importance in both papers and discussions is referred to.

Equipment Used Afloat and Ashore

Motor Lifeboats All Welded Black Steel Zinc Coated—A New Type of Radiator—New Pliable Wood Veneer

USE of electric arc welding in the building of smaller steel boats is of great interest to naval architects and shipowners. Undoubtedly this type of construction will be widely used in the future.

When the U. S. Grant, of the United States army transport service, required two motor lifeboats it was decided that they should be of all welded construction. Plans and specifications were prepared by the army transport service and the contract was placed with the Welin Davit & Boat Corp., Newark, N. J. This company had recently completed 20 large steel lifeboats for the United States liner MANHATTAN which were very similar in size and shape to the proposed welded lifeboats, though not of welded construction.

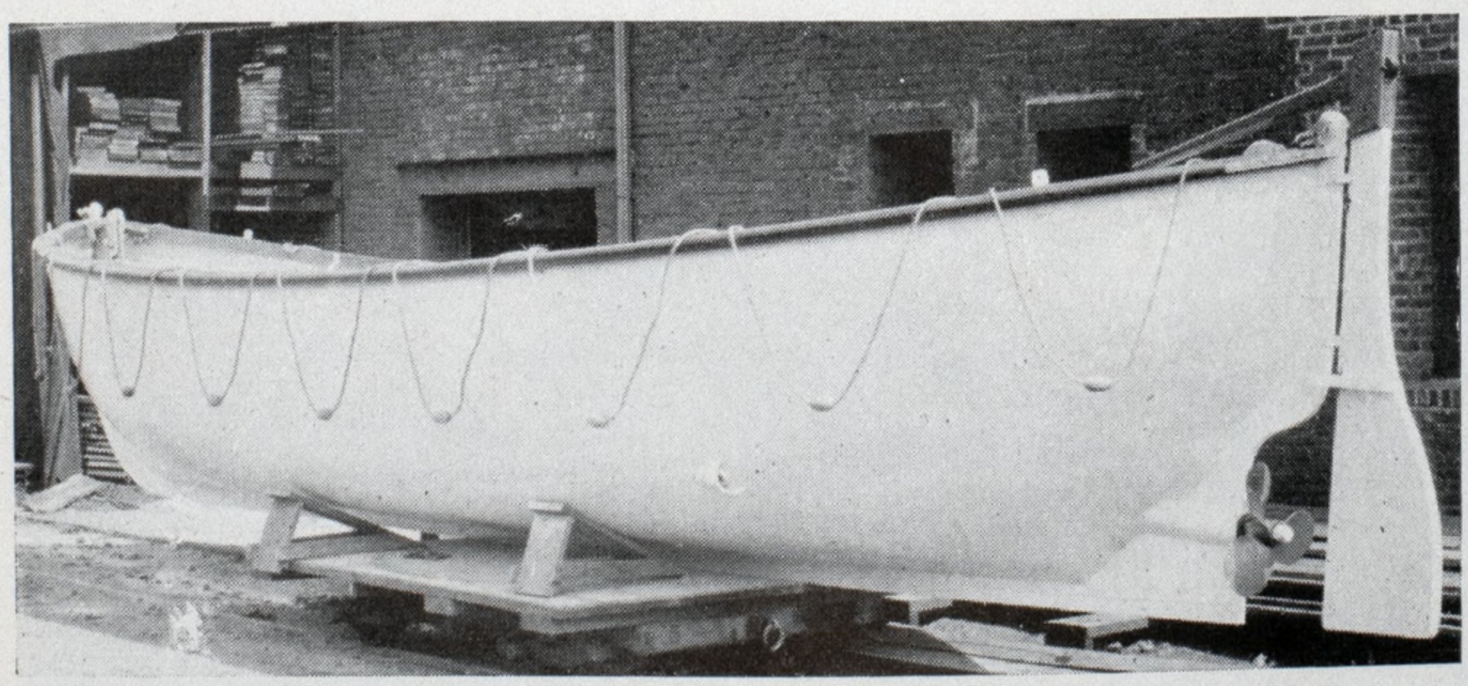
The bureau of navigation and steamboat inspection approved the use of electric welding in the construction of the two motor lifeboats. They are 30 feet long, 9 feet wide and have a depth of 3 feet 9 inches and are certified for carrying 40 persons. The keel is a single length of 1 x 4 inches bar steel, while the sternpost is built of two pieces of ½ x 4 inches bar steel bent around the stern tube and fillet welded. The hull is of 14 B.w.g. black sheet steel and is butt welded. All seams are backed, on the inside, with ⅛ x 1¼ inches steel straps which are tack welded to the hull.

The garboard strakes, stem and stern shell plating are flanged to the keel, stem and sternpost and fillet welded both inside and out. It is interesting to note that no warping occurred during the welding.

A watertight housing, made in two sections for convenience, covers the engine. The intercostals, of 12 gage B.w.g. steel, are tack welded to floors and shell plating. All air tanks are removable for cleaning and painting. Those in the ends are of 18 B.w.g. galvanized sheet steel, while those on the sides are of 20 B.w.g. metal.

After the hull was entirely plated it was thoroughly sandblasted and sprayed inside and out with molten zinc. This coating was applied to a thickness of about three ounces per square foot of surface, except along the bilge line, stem and stern post where it was applied doubly or trebly thick. All metal surfaces were treated in the same manner, with the exception of small fittings which were galvanized by the usual method.

The power unit is a Buffalo navy type 25 horsepower gasoline engine, with electric starter. On the test runs a speed of about 7 knots was obtained with the boats loaded to capacity.

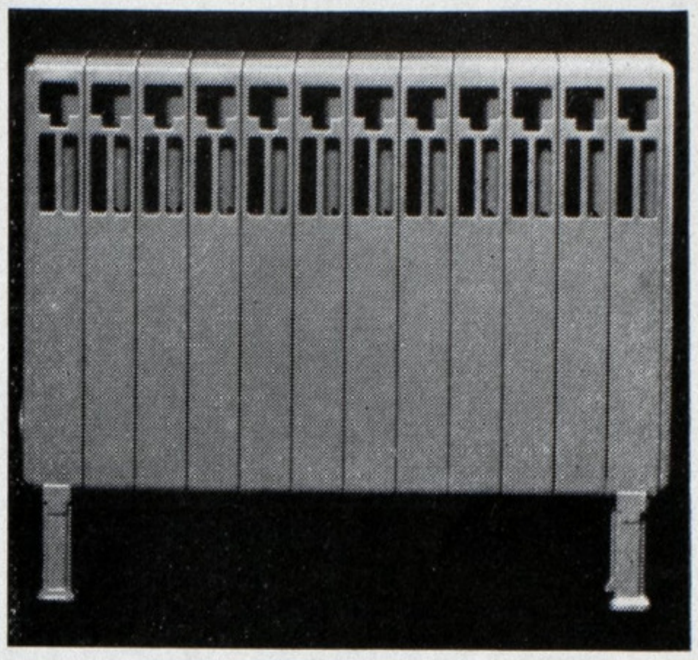


One of two all welded motor lifeboats for Army Transport Service—Black steel butt welded—Zinc sprayed after completion

Radiator for Marine Use

A NEW and distinctive type of radiator combining utility and attractive appearance has been developed by the Shaw-Perkins Mfg. Co., Pittsburgh. It is the result of extensive research and many years of experience in the manufacture of radiation apparatus. The best approved materials are used in its construction and it is designed in accordance with the most modern engineering practice.

The radiator has an extended surface steel structure in contact with an internal copper tube. All surfaces, including the exterior are joined in heat contact with the copper tube, making an efficient and rugged unit. Heat is conducted through the extended steel surface from the copper tube which contains the heating medium, and is given off by convection to the air which circulates through and over the radiator and also, by radiation, from the exterior surfaces. This radiator, therefore, supplies both convected and radiated heat and forms its own cabinet, grille and radiator, all in a single integral unit. This is especially advantageous on shipboard where space is at a premium. The accompanying illustration indicates its pleasing appearance.



New Type Radiator for Marine Use

These radiators can be installed for one or two pipe steam and hot water heating systems. Ratings are based on heat emission of 240 B.t.u.'s per square foot per hour at 215 degrees Fahr. steam and 70 degrees room temperature. These ratings are for condensation only with nothing added for heating effect. The manufacturer is prepared to give the size and heat emission of radiators for various temperature conditions and for varying conditions of heating elements.

An installation of this type of radiator was recently made in a large yacht. Its simplicity, ruggedness. efficiency and neat appearance sum to make this type particularly suitable for installation in passenger accommodations on all types of ships.

New Flexible Wood Veneer

A WATERPROOF, flexible, genuine wood veneer wall covering, suitable for marine application has been developed by the United States Plywood Co., Inc., New York. The waterproofing of this material, which has been given the trade name, "Flexwood," is accomplished by employing a waterproof adhesive for mounting thin wood veneer on fine cloth backing. The flexing process makes the veneer pliable and flat.

Navy Secretary Points to Need of Shipbuilding

The condition of the shipbuilding industry in the United States was described in the report to Secretary Adams of the navy to President Hoover as "serious due to the almost complete lack of work, either private or governmental." The secretary, in in his report, pointed out that permanent injury to the shipbuilding industry, "would mean a serious impairment to the national defense and the maritime and general economic welfare of the country."

Clinton L. Bardo, president of the New York Shipbuilding Co., Camden, N. J., in commenting on Secretary Adams' views said: "Until navies are abolished altogether it cannot be denied that an efficient merchant fleet is an auxiliary transport of the utmost importance. Merchant ships can be, and when built under the terms of the Jones-White law must be, designed for all uses of peaceful trade in time of peace yet be readily and quickly convertible as naval auxiliaries when an emergency arises.

"In time of peace, the merchant fleet, not only serves the useful economic purpose without waste, but it also provides a continuous training for officers and men that gives the nation a reserve personnel expertly trained in the operation of ships that can be called into being as a naval force of enormous potentiality in any time of national emergency. Thus the present question of naval armament will be more satisfactorily solved for America if our leaders understand that in the building of an adequate merchant marine capable of serving in the national defense in times of national stress, there is no economic loss."

Transatlantic passenger fares were revised upwards by 6 per cent effective Dec. 5.

French Super-Cruiser, Keel Laid at Brest

For a long period shipbuilding news have not included the laying down of the larger type of war vessels. It has consisted entirely of 10,000-ton cruisers and lesser vessels, but the holiday seems to be over for reports indicate that the French have recently laid the keel of a super-cruiser. This vessel will be of 26,500 tons displacement and is intended to more than offset Germany's pocket battleship. The supercruiser's name is the DUNKERQUE, and is to be built at the naval dock yard at Brest. Four years will be necessary to complete the new vessel and the cost is said to be $24,000,000. The tonnage of the new vessel will be applied to the capital ship tonnage allowed France.

Capt. Andreas C. Paulsen has been appointed to command of the SANTA PAULA, new Grace liner.

English Yard Launches Sloop for Portugal

THE GONCALVES ZARCO, second of two second class sloops which R. & W. Hawthorn, Leslie & Co. Ltd. is building to the order of the Portuguese government was launched on Nov. 28, from the Hebburn shipbuilding yard.

The dimensions of the vessel are: Length overall, 267 feet 7 inches; breadth extreme, 35 feet 7 inches; depth to upper deck, 17 feet.

The vessel has a long forecastle deck extending over about three-quarters of her length. The stem is raked and has been specially designed to alow of protective paravanes being fitted, if required. Specially designed for service in the Portuguese colonies, the crew's quarters are situated forward on the upper deck, thus providing a maximum amount of natural ventilation and light. The ward room is also situated on the upper deck, while the officers' cabins are situated on the lower deck

In addition to natural ventilation, a complete system of mechanical ventilation is provided for all living spaces with punkah louvres fitted in connection therewith, which provide complete control of the ventilation to each compartment.

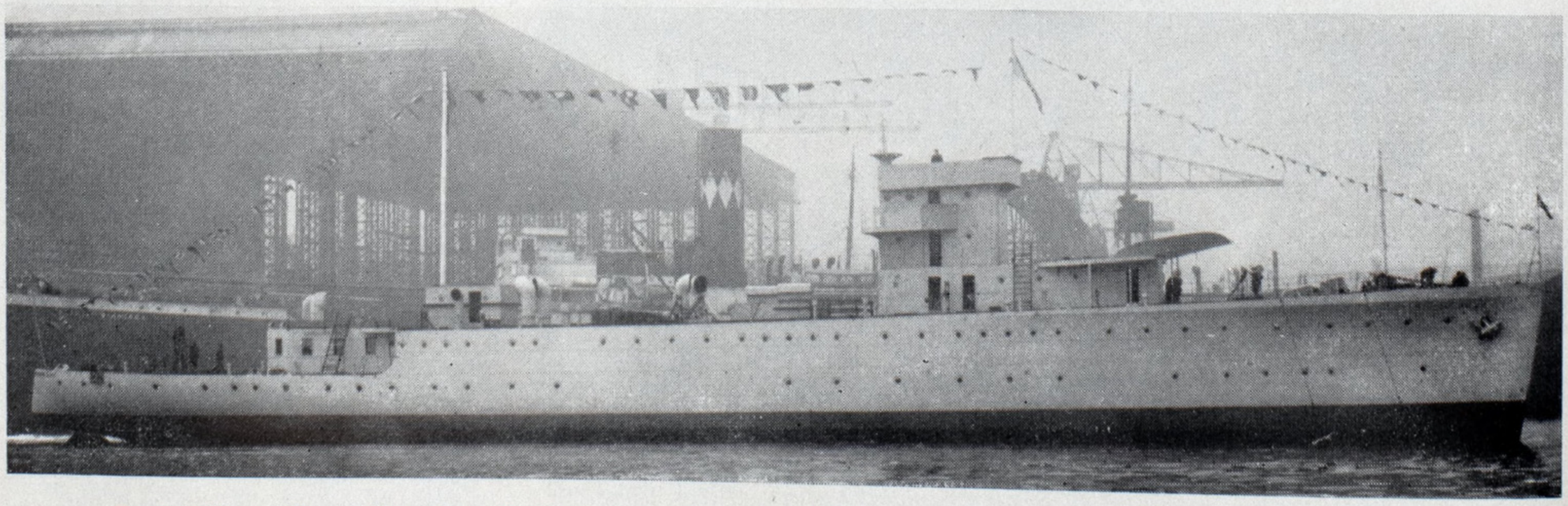
Refrigerated stores and magazine cooling arrangements are fitted. Two separate refrigerating plants are installed for carrying out these duties which are interconnected.

The main armament consists of three 120 millimeter guns, two forward and one aft, one of the forward guns being superimposed to allow both to have maximum arcs of fire. For anti aircraft duties two 40 millimeter pom-poms are installed. A complete fire control system is fitted in connection with the armament.

The vessel is provided with gyro-compass installation and also with echo sounding gear and submarine fog signal reception gear.

Propelling machinery has been constructed by R. & W. Hawthorn, Leslie & Co. Ltd. at the St. Peter's works, and consists of twin screws driven by single reduction geared turbines of the Parsons type, capable of developing 2000 shaft horsepower on trial. Steam is supplied to the turbines by two water tube boilers of the three drum Yarrow type. The same company recently completed two sets of machinery for sloops for the British admiralty.

The christening ceremony was gracefully performed by Madame Esparteiro, wife of Lieutenant Commander Joaquim Marques Esparteiro, member of the Portuguese mission of fiscalisation in England. After the launching the guests adjourned to the model room where the customary toasts were honored.



Second Class Sloop, Goncalves Zarco, for the Portuguese Government—Launched in England Nov. 28, 1932

Personal Sketches of Marine Men

Graham M. Brush, President, Seatrain Lines Inc.

By Ben K. Price

HE HAS developed an idea, unique in ocean transportation, and has demonstrated its practical value in service.

A GRADUATE of Sheffield Scientific school, Yale university, he served as a naval aviator during the World war.

WITH faith in the soundness of his project he is meeting opposition with determination backed by confidence.

—Kaiden Keystone Photos

THE uphill fight of the Seatrain idea, with its promise of far-reaching effect on present methods of marine transportation, has focussed attention to Graham M. Brush, president of Seatrain Lines Inc., New York City. Affiliated with marine shipping little more than 12 years, he has sprung into special prominence, with the recent inauguration of Seatrain service between New York and Havana, this an expansion of his first venture, the service between New Orleans and Havana established almost four years ago.

Upon the shoulders of this man has fallen not only much of the credit for the creation of the idea but much of the brunt of battle in its advancement. Mechanical obstacles, repeated financial discouragement at outset, natural resistance of shippers to a new idea, competitive retaliations taking the form of a dozen different weapons—all had to be met; also deadening delays at Washington, mail subsidies and senate committee hearings. Shipping board has granted temporary permission to operate, pending consideration of effect on present carriers. Interstate commerce commission denied petition of nine railroads for the right to bar the interchange of freight with Seatrain ships. Such has been the array. Yet few would deny that the idea has taken some real strides forward.

Mr. Brush was born in Greenwich, Conn., 37 years ago. There, it might be added, his father was born and also his grandfather before him. He was graduated from Sheffield Scientific school, Yale university, in 1917, and became a naval aviator in the World war. It was during his naval service that he had his first opportunity to study shipping at first hand, for he was appointed on a commission to investigate the arrival of munitions, more particularly airplanes and airplane parts, on the other side. It was this experience that did much to bend his thought in the direction in which he has since achieved distinction, whereby freight cars a hundred to a ship are lifted with their merchandise into ocean drawing vessels for transport abroad.

Certainly it was only two or three years later, when as assistant to the president of the Ward line, that he found himself in the midst of a similar study, one pertaining to peace-time shipping operations on this side of the Atlantic. Then, in 1925, he resigned to further his studies and to gradually evolve an idea—the Seatrain idea.

Analysis of American steamship lines operating in North American trades showed that all were spending in terminal expenses 50 cents or more out of every dollar received. The balance of the dollar was used to pay for vessel operation, management, traffic expenses, insurance, taxes, bond interest and profits, if any. Further, as Mr. Brush was later to testify, analysis showed that the vessels were engaged more than half of their time lying at the docks, loading and discharging, and that the cost of vessels lying at docks paying wharfage was, for all practical purposes, as great as when at sea burning fuel for propulsion.

As a method of expediting the turn-around of ships in port, the Seatrain idea, described at length in previous issues, began to be transformed into a reality in 1927, with the formation of the Over-Seas Railways Inc. In this enterprise Mr. Brush was joined by Joseph Hodgson, vice president of the Ward Line, in charge of traffic, and who contributed greatly to the development of the Seatrain system of transportation.

This company operated the first ship, the SEATRAIN NEW ORLEANS, which as described at the time, went into service Jan. 12, 1929, between New Orleans and Havana. But to facilitate the financing of the two ships, which were put into service this fall between New York and Havana—the SEATRAIN NEW YORK and SEATRAIN HAVANA—Mr. Brush formed Seatrain Lines Inc., on June 13, 1931. This later company purchased all the assets and liabilities of Over-Seas Railway Inc., except certain cash and patent rights. The two latter vessels were described fully in the last November issue of MARINE REVIEW. The company operates terminals at New Orleans, Hoboken, N. J., and Havana, with offices and representation in various cities.

Mr. Brush, who resides in Greenwich, likes to fish and also finds recreation in cabinet-making. Included in his clubs are the Yale and Whitehall clubs, of New York City.

S. S. Colombia

(*Continued from Page* 12)

operates on brine supplied from the main cargo system and is of the vertical surface cooling type, completely self-contained. It includes a 3000 cubic feet per minute blower, dehumidifier coils, dampers and regulators. In summer time the unit operates as an air cooler and dehumidifier, while in the winter time it circulates warm air supplied from the discharge of one of the main ventilation and heating supply systems.

Electric Generators, Turbine Drive

For generating electricity, three turbine driven, geared, General Electric generators are located on a flat in the after starboard end of the engine room. Each set is rated at 250 kilowatts, 240 volts, direct current and operates on the two-wire system. Two 100 ampere neutral balancer sets are installed for obtaining 120/240-volt, 3-wire service. Power is supplied by this plant for the extensive use of electrically operated devices throughout the ship, including lighting, mechanical ventilation, galley and pantry equipment, windlass, capstans, winches, and watertight doors. Practically all of the auxiliary motors were supplied by General Electric Co. Electric ranges, bake ovens and other galley equipment were furnished by Westinghouse Electric & Mfg. Co. To avoid operating the main generators during layoffs an arrangement is provided for feeding the switchboard from shore current.

For emergency current supply for lighting, emergency bilge pump, radio, etc., in case of failure of the main generators, there is installed a storage battery plant of 60 type MVA-11 Exide cells and a 20-kilowatt, 120-volt, gasoline engine driven generator, located in the wireless house on the boat deck. Should the engine room supply fail, the emergency circuits are automatically switched over to the battery, and if the engine room failure continues the emergency generator is started. The emergency circuits are automatically switched back to the engine room when that supply is restored.

Light, power and interior communication wiring installation conforms to the requirements of the American Bureau of Shipping and National Electric Code of America. Particular care has been exercised to provide fire-proof boxes for all connections. The wiring is neatly arranged and in the accommodations, where practicable, is concealed.

About 2500 outlets are fitted for regular lights and lights on each side of the ship, under the overhang for lowering lifeboats. Decorative lighting fixtures are installed in public spaces and suites in harmony with the designs of these spaces. Berth lights are provided for each bed and berth in passenger quarters.

One Sperry 18-inch incandescent searchlight of 1,400,000 beam candlepower is installed on top of the wheelhouse, and controlled from within the wheelhouse. The navigating equipment includes a Sperry gyro compass with repeaters at all steering stations, rudder angle indicator and a shaft revolution indicator.

Two separate telephone systems are installed, one of regular central station type with six simultaneous calls for passengers and one loud speaking type for ship operation. Both systems were supplied by Holtzer Cabot Co. Public spaces, passenger toilets and baths are provided with call bells. Telephones of the hand set type are provided in all passenger staterooms. There is also an interior communication battery plant of 55 KXK-9 Exide cells for general service.

A regular equipment of engine order and docking mechanical telegraph with 12-inch transmitter and 16-inch indicator was supplied by C. J. Henschel. An automatic electric fire-alarm system of the fire detecting wire type with constant supervising current, supplied by the Garrison Co., New York, is installed in all passenger quarters.

The R. C. A. Victor Co. supplied the complete radio broadcasting reception, including a short-wave circuit, and music transmission system with loud speakers, for all of the important public spaces. The same company also supplied a portable photophone system. Two concealed loud speakers are fitted in the dining room, lounge and smoking room. Two watertight horn type speakers are installed on the dance and sports decks, and one horn type speaker is installed at the swimming pool and on the veranda. A portable microphone for broadcasting music of the ship's orchestra to all loud speakers is also provided.

Capt. Nicolaus Johnsen, commander of the North German Lloyd liner, EUROPA, and Commodore of the line, underwent an emergency appendicitis operation at sea Dec. 3 and two days later when the EUROPA docked at Brooklyn, he was transferred to a hospital in Brooklyn, where he died on Dec. 6. His body was returned to Germany on the EUROPA when she sailed Dec. 8. He had been at sea 49 years.

On Dec. 15 the house of representatives, committee on merchant marine, radio and fisheries, adopted a resolution opposing the President's executive order transferring the Merchant Fleet Corp. to the department of commerce.

Hudson River Steamboats Operate in Winter

Despite adverse weather conditions during the winter months, the Hudson River Steamboat Co., operator of the Night line, has the distinction of being the first company in the history of navigation on the Hudson river to maintain an uninterrupted service between New York, Albany and Troy throughout the year, according to an announcement made recently by A. V. S. Olcott, president of the company. The line has now entered upon its second year of service and hopes to continue throughout another year without interruption from ice.

The Hudson River Steamboat Co. was recently awarded a lease of the Hudson River night line property by a federal court judge and is now running the well known river steamers BENJAMIN B. O'DELL and POUGHKEEPSIE in regular night service between New York, Albany and Troy. Both vessels have big freight accommodations and the BENJAMIN B. O'DELL has a large number of steam-heated staterooms and comfortable lounge and card rooms.

Bremen Breaks Record

On her arrival in New York, Dec. 14, the North German Lloyd liner, BREMEN, established a new record for the transatlantic run from Cherbourg breakwater to Ambrose Light vessel of four days 15 hours and 56 minutes. This time was 47 minutes faster than that established on Nov. 10 by the BREMEN when she broke the EUROPA's record of four days 17 hours six minutes.

Goverment Position Open

United States civil service commission is holding an open competitive examination for a position as senior physical oceanographer to fill a vacancy at the United States coast guard station at Wood Hole, Mass., and vacancies occurring in positions requiring similar qualifications for duty in Washington, or in the field.

The entrance salary is $4600 a year, less certain deductions. Competitors will not be required to report for examination at any place, but will be rated on their education, training and experience.

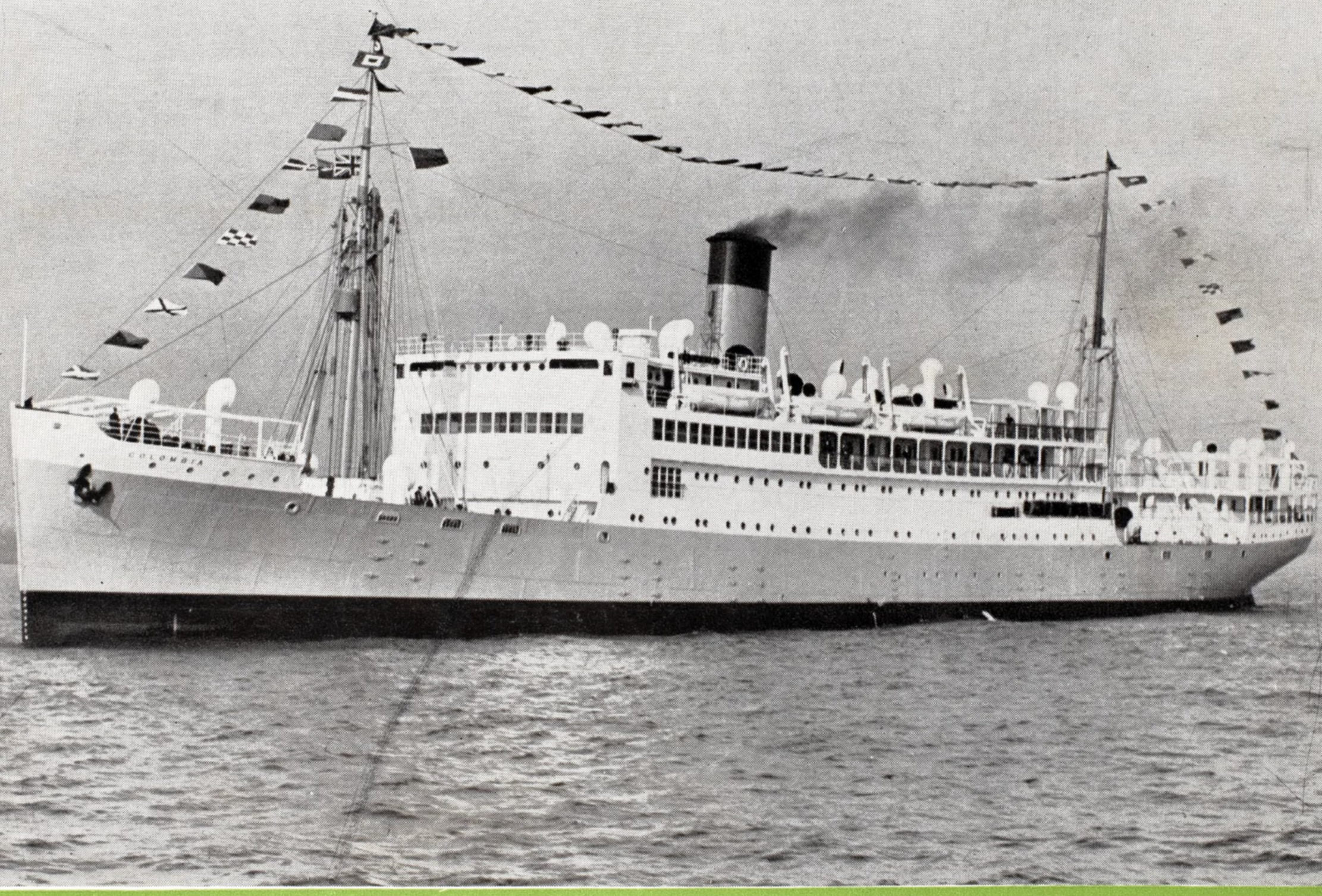
E. J. Hayden, central division manager of the Linde Air Products Co., Chicago, was elected president of the International Acetylene association at its annual business meeting held in Philadelphia, Nov. 18. Mr. Hayden was vice president of the association.

The Pacific Steamship Co. announces the sale of 14 ships on Jan. 20 in Seattle.

Marine Review

Reg. U.S. Pat. Off.

The National Publication Covering the Business of Transportation by Water



S. S. COLOMBIA

January, 1933

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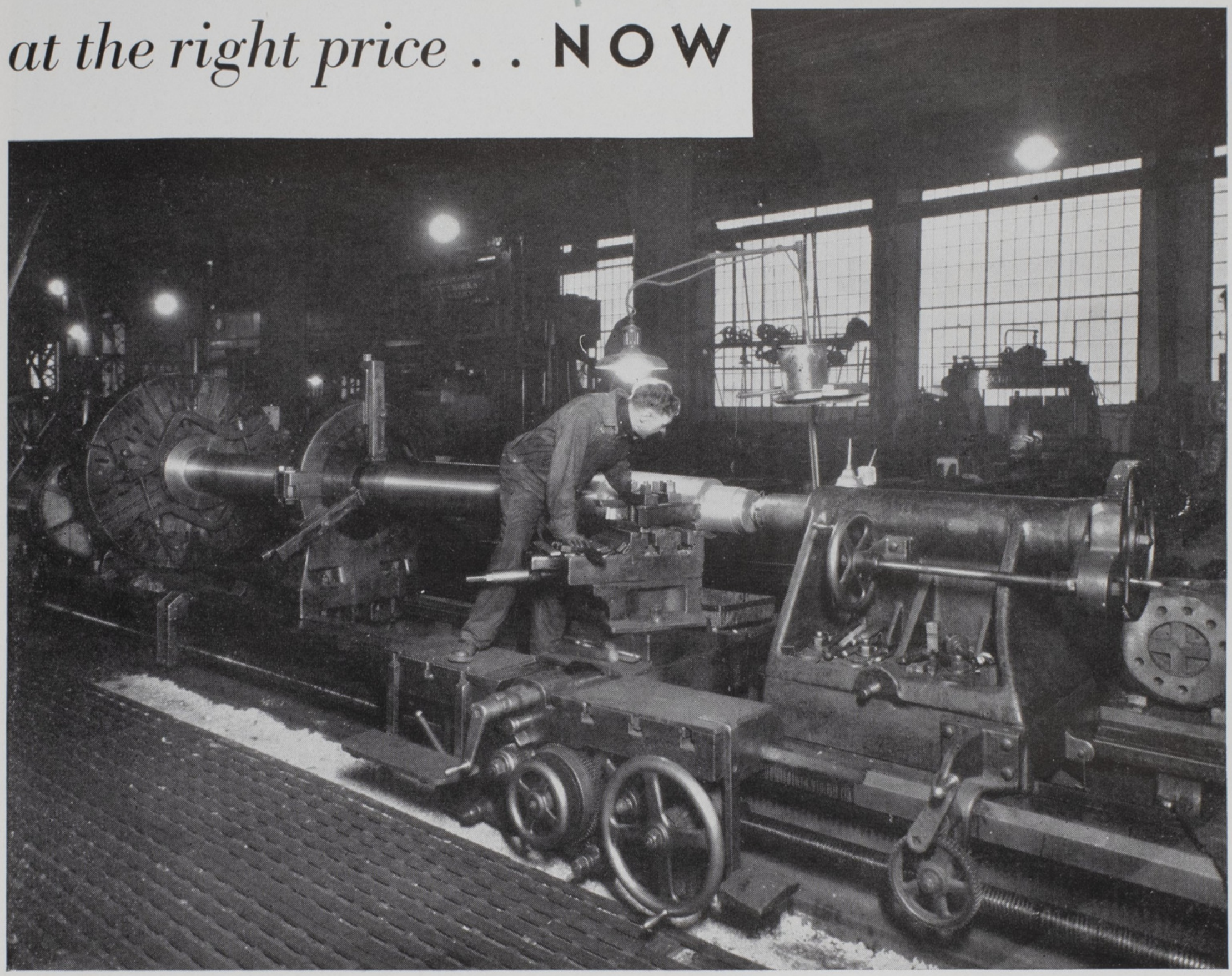

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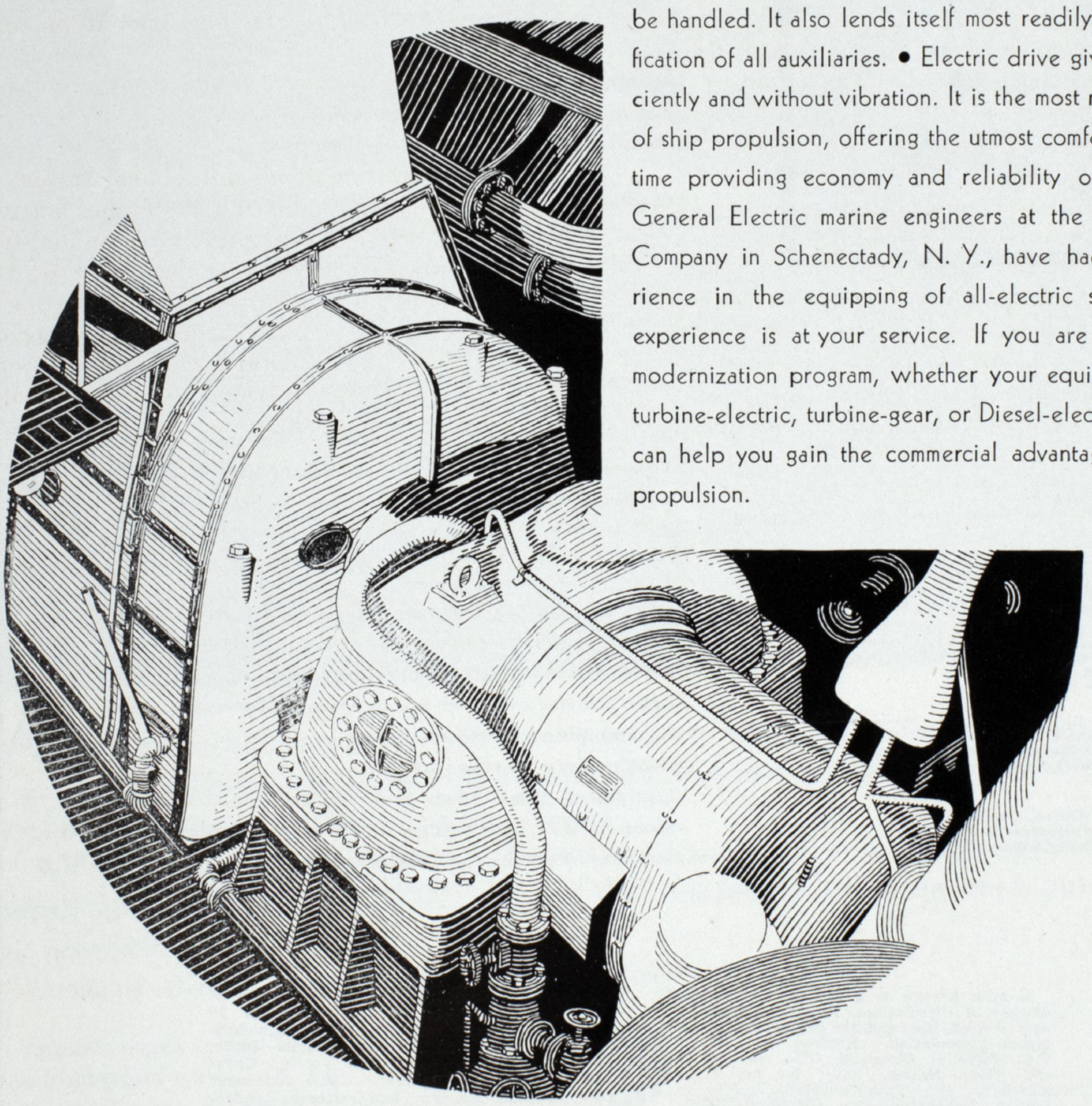

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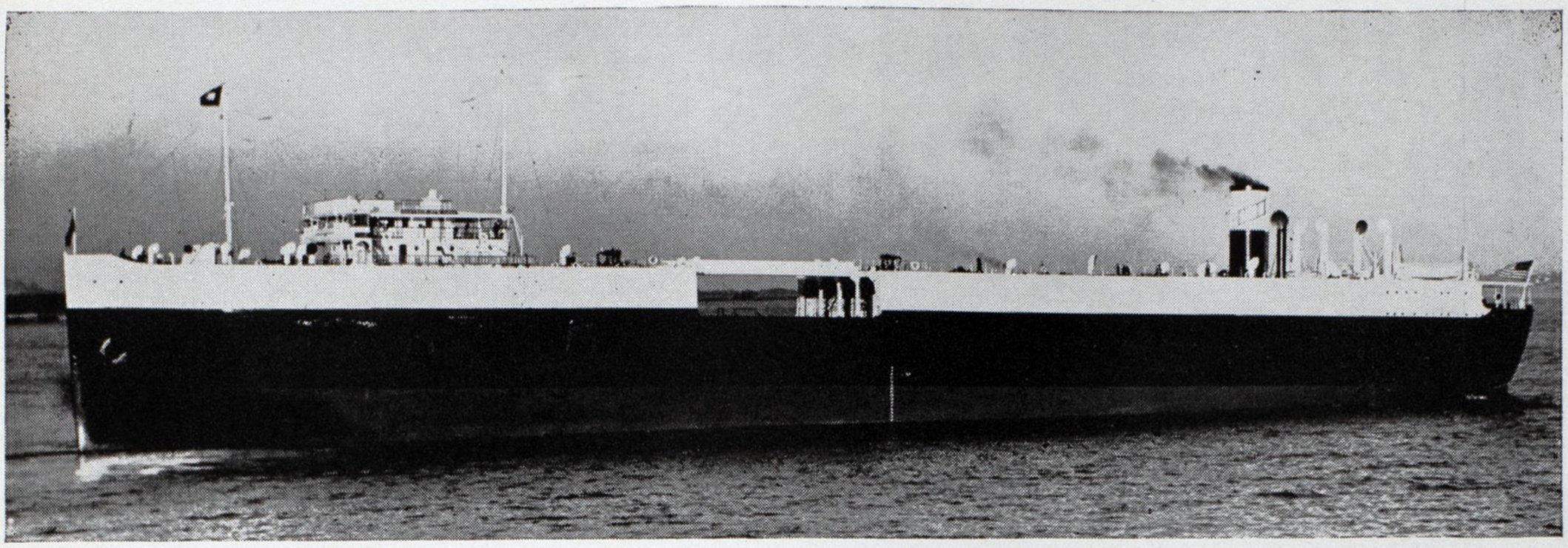

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